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ARTICLE I.

Cotton Trade between the South and West.

THE industrial economy of the nineteenth century is distinguished from that of all preceding periods by the improvements in labor-saving machinery, the use of steam as a motive power, and the increased production of cotton. These are controlling elements of production, of commerce, and even of public policy, affecting in a greater or less degree the pursuits and social condition of every civilized people.

Through the agency of machinery and steam, Great Britain controls the cotton market of the world; while the soil in the cotton-growing region of the United States is being impoverished by producing the raw material. But the cotton-growing States are not the only sufferers from this English monopoly. For the greater portion of the cotton being sent across the Atlantic, the current of trade flows from the cotton region in an eastern direction, and prevents a profitable commercial intercourse from being established between the cotton States of the South and the grain States of the West. Moreover, as the raw material must go to the mill before it can be used by the consumer, the western consumer pays the charges of transportation from the field to the mill, and from the mill back again to this country, and also the profits earned by the manufacturer and merchant; all of which might be saved, or at least the money would be retained in the country, if the raw material were converted into fabricks by the producers. Hence, it is obvious, that the western consumers as well as the southern producers are loosers by this unnatural condition of the cotton trade, while the remoteness of the mills from the cotton fields is no dis-

advantage to the foreign manufacturers so long as they control the market for the raw material and the fabricks.

It is the true policy of the cotton-producing States, to convert, al least, as much of the raw material into fabricks as will enable them to control its price. This would increase their wealth and commercial influence to an extent which can scarcely be conceived, and would, in a few years, transfer the sceptre of commerce from Europe to America.

It is doubtless in the power of the Southern States to produce these results, if they would only resolve to do so: but cotton-growing is the favorite and all-absorbing pursuit of the southern people, and being more congenial to their habits and taste than any other employment, it is scarcely to be expected that they will make any considerable progress in manufacturing so long as new lands can be obtained for planting. This, however, should not be a subject of regret to the people of the grain States; for although it would be more to their advantage that the cotton mills should be located in the cotton States than in Great Britain, yet it were still better for them, and better also for the nation at large, that these mills should be established in the States north of, and adjacent to the cotton fields.

The central region of the United States is emphatically the natural and true manufacturing district of this continent. Here, there is a more perfect combination of all the elements required in the economy of converting raw cotton into fabricks than can be found on any other part of the globe. A favorable climate, a productive soil, an abundance of fuel, proximity to the cotton fields, and facilities for distributing the fabricks, all combine to warrant this opinion. Moreover, this is the true region of Indian corn, the great American bread plant, which is more to be relied upon for the support of a dense population in a vigorous working condition, than any other plant yet discovered.

In the earlier volumes of the Western Journal we published many facts and estimates showing the comparative advantages of manufacturing cotton fabricks in the grain growing States of the West; but perceiving that the time had not arrived for commencing this branch of industry upon an extensive scale, we ceased to agitate the subject. But within a few years past changes have taken place, and are still going on, which authorize the belief, that the time is now ripe for the establishment of cotton mills in the Mississippi

valley. Large additions have been made to the population of the Central Western States since 1850, and the railroad systems of this region, though not complete, have been defined upon the map, so as enable men to form a correct judgement touching the merits of different points for manufacturing purposes. The difficulty of procuring operatives — one of the principal objections formerly urged against establishing cotton mills in the west—has been obviated in a good degree by our railroad connections with the Eastern States, and by the growth of western cities. It may be difficult to procure experienced operatives at the commencement; but the larger cities could, with great advantage to their own interests, furnish apprentices in numbers sufficient to supply any reasonable demand, after the business shall have been established. Indeed, cotton mills in, or near populous cities, are to be regarded in the light of humane institutions.

Were there cotton mills near St. Louis, which could give employment to a few thousand operatives, they would be the means of rescuing many families from want, and of preventing many from falling into vices which lead to degradation. Such establishments would relieve the citizens from many onerous demands, which are now made upon them for charitable purposes; and save many high minded individuals from the painful and degrading necessity of soliciting or receiving charity.

The establishment of cotton mills at St. Louis or at any of the neighboring towns, would immediately bring an extensive trade to this city from the Southern States, which can be obtained by no other means in its power. The produce of the South must come to the West, so as to establish a direct current of exchange between the two regions, before St. Louis can expect to obtain any considerable amount of southern patronage.

But there is still a broader and higher view of this subject: Every one who has studied the causes which produce the political and social differences between the Northern and Southern States, must have been impressed with the importance of increasing the influence of the central region, as a means of preserving the Union. We can imagine no way by which the political and social influence of the center can be enlarged but through the agency of commerce: instead of flowing from the center outward, as at present, the current of trade must be reversed. But before this can be accomplished, the center must become a manufacturing district upon an extensive scale.

So long as the American people remain under the influence of a mania for foreign trade, no great city can ever grow up in the interior without the aid of manufacturing industry. Commerce is only a secondary element in the growth of western cities, they must produce their own commerce. And without great producing cities, all our railroads, when completed, will add nothing to the political or commercial influence of the central region.

We know how hard it is to induce capitalists to embark their means in manufacturing: they have more faith in actual results than in estimates of profits to be derived from a business with which they are not acquainted, and hence it would be useless for us to enter into calculations to show that cotton manufacturing would be a profitable business at St. Louis, or at any other place in the Western States. But we venture to affirm that, so long as cotton mills are worth running in New England, they can be made to pay remunerating profits in Missouri. From the States bordering on the Mississippi, cotton can be brought to St. Louis nearly as cheap as it can be carried to New Orleans, and the freight, insurance and other charges from New Orleans to Lowell, will make the raw material cost, at least, five per cent. more at the New England mills than at St. Louis. This one item, to say nothing of the cheaper fuel, bread and provisions in the West, is sufficient to counterbalance many of the advantages claimed for New England as a manufacturing district. But an experiment in this branch of industry has already been made in St. Louis. The St. Louis cotton factory has been in operation for some ten years, and from our knowledge of the proprietors, we are persuaded that they would not have pursued an unprofitable business through so long a period. And, as further evidence of the success of their enterprise, they have enlarged their establishment within the last two or three years.

We desire to impress upon the minds of western men the fact that, as a rule, manufacturing capital is not migratory. Almost every branch of manufacturing requiring large means must be introduced into districts where they have not existed, by the people in whose midst they are to be located; and therefore we should not wait for capitalists of other countries to build cotton mills in the Western States. When by actual experiment we shall have established the fact that cotton mills are more profitable here than in the Eastern States, then capital will come to build them, but until then we should not expect it. Then let us begin at an early day;

for even the commencement upon a liberal scale will make an impression abroad that will be worth to us the cost of the mills.

Sagacious men in the East will readily perceive the influence which a large consumption of cotton in Missouri would have upon the destiny of the Western and Southern States, and their confidence in the success of our public works, and also in the growth of our cities will be greatly strengthened.

The annual consumption of fifty thousand bales of cotton at St. Louis could scarcely fail to establish a liberal commercial intercourse between this city and all the cotton-growing States west of Georgia. Railroads can never effect this object, even if they should carry merchandize free of charge, unless a considerable part of the cotton crop comes in this direction: there must be an exchange of products, or there can be but little commerce.

The cotton fields are on the border of Missouri, but their productions travel from three to ten thousand miles before they reach the consumers in this State: they either go by the way of New England, or make a voyage across the Atlantic! The cotton mills would be the means of bringing it on a more direct route.

Iron is generally regarded as the great staple of St. Louis; but the producers in Missouri can never expect to supply the southern demand to any considerable extent without the agency of cotton mills. Open the cotton trade, and the iron trad will follow, and these two branches of industry will promote the interests of each other.

By establishing cotton mills, and drawing a portion of the cotton crop to this point, we shall give a decided check to the current of commerce, which carries away so large a share of the profits of southern and western labor to the Eastern States and to Europe; we shall establish a fixed capital, a financial center to which commerce and money will flow from every direction, and, more than all, we shall enlarge and strengthen the political influence of the central region in the councils of the nation.

But we are met by the practical enquiry, do the people of St. Louis possess the enterprise and the means necessary to enable them to accomplish such mighty objects? We are persuaded that they would be found to possess both, if a few influential individuals could be induced to take an interest in the subject. The subject addresses itself to the land owner, the merchant and manufacturer, and could they see it in all its bearings, we believe it would not be

long before a company could be formed with sufficient strength to make a very respectable beginning. One successful experiment upon a liberal scale would draw capital from abroad sufficient to enlarge the business to almost any extent that might be desired.

It would seem that an object so well calculated to promote the interests of the whole people, should in some way receive encouragement from the State, but we conclude that with one exception, it is the better policy to leave this as other branches of industry to succeed or fail according to its own merits. Exemption from taxes is the only boon that we would claim in its behalf, and this we think may be granted to the manufacturers of both cotton and iron, without doing injustice to the tax-payers of the State.

It is to the development of these two branches of industry more than to all other sources that Missouri must look for pre-eminence in wealth and social influence; and the encouragement afforded by exempting them from taxes, will be abundantly compensated to the tax payers in general by the augmented prosperity of the State.

Never did any country possess a broader, richer field for solid, profitable enterprise than does Missouri; nor did any people ever have more laudable inducements to exert all their energies in building up a city than have the citizens of St. Louis.

The basin of the Mississippi is the heart of the Union, but it has been paralized by an unnatural development of the extremities. Patriotism not less than the desire of wealth should stimulate the people of this region to strengthen and enlarge its commercial, political and moral power: St. Louis is its center, and upon the wisdom and moral character of her citizens depends in a good degree the future destiny of the nation.

In connection with the foregoing subject, we copy the following communication from Philip Allen, of Providence, Rhode Island, to James Guthrie, U. S. Treasurer, touching the manufacture and consumption of cotton in the United States:

Providence, November 21, 1855.

Dear Sir: It does not appear that there are many articles of value manufactured in the United States that have the home market, and entirely exclude the foreign manufactures of the same descriptions. I have examined with attention the tariff, and find that many of the manufactures of this country compete with the foreign, and nearly exclude them from home consumption. I have

also examined the importations and exportations of some of the most important entries in the report, and send the result of that examination, with remarks on the same. Probably no two persons would give the same opinions on the same questions. There is, no doubt, errors in my statements, but I have endeavored not to give an exaggerated statement of my views. If the remarks I have made on the tariff can be of the least service to you, it certainly will be a source of much pleasure to me. I shall leave home on Monday for Washington. Please accept my best regards for yourself and family. Yours, respectfully, &c.

Hon. JAMES GUTHRIE, Secretary of Treasury, Washington, D. C.

COTTON.

Consumption of Cotton in the United States for the year ending August 31, 1855.

			Estimated bales.
Total crop of the United States			2,847,339
Stock on hand at the commencement of the year, Sep. 1, 1854, in the southern ports	85,486		
In the northern ports	50,117		
			135,603
Making a supply of bales			2,982,942
Deduct therefrom the export to foreign ports	2,244,209		
Less foreign included	891		
		2,243,318	
Stock on hand September 1, 1855 in southern ports	76,644		
In northern ports	66,692		
		143,336	
Burnt in New York and Philadelphia		2,704	
			2,389,358
Taken for home use			593,584

Taken for home use in the year 1854.....610,000 bales.

The stock in hands of manufacturers will not vary much from one year to another.

		lbs.
By estimation the amount of yarn spun from cotton for the year ending Jan. 1, 1855, in England, is		704,465,764
Exported in manufactured goods, lbs	312,227,202	
Do. in yarn	124,480,129	
Do. in thread	3,461,100	
		440,168,431
Remaining for home use		264,297,333

Goods	lbs.	24,717,986
Yarn		6,613,006
Thread		266,793
		31,597,785

The average number of yarn spun in England is probably No. 60.

Cotton consumed in the United States, south and west of Virginia, not included in the estimate, supposed to be about 80,000 bales.

Amount of cotton manufactured in the United States	lbs.
600,000 bales; average weight per bale, 437 pounds	262,200,000
Deduct 12 per cent. waste	31,464,000
	230,736,000

The value of one pound of cotton, when manufactured, will not vary much from 28 cents per pound.

Cottons of American manufacturers consumed in the United States, as stated above	$64,606,080
Deduct exported	5,857,181
	58,748,899

Foreign manufactures of cotton imported into the U. S. for the year ending June 30, 1955:

IMPORTED.

Piece goods	$12,563,522	
Velvets	432,715	
Cords, gimps, and galloons	128,500	
Hosiery&artificial articles made in frames	2,055,595	
Twist, yarn, and thread	997,673	
Hatters' plush of silk and cotton	45,081	
Laces, trimmings, and braids	767,055	
Manufactures not specified	1,534,026	
Embroideries, (supposed,)	2,000,000	
		$20,524,167

EXPORTED.

Piece goods	1,336,634	
Velvets	62,173	
Cords, gimps, and galloons	34,827	
Hosiery and articles made on frames	127,191	
Twist, yarn, and thread	38,460	
Hatters' plush of silk and cotton	1,635	
Cotton trimmings, laces and braids	69,665	
Manufactures not specified	413,269	
Embroideries	54,986	
		2,138,840

For home consumption	18,385,327
American manufactured cotton, home consumption..	58,748,899
Total home consump'n for the year end. June 30, '55	77,134,226

Thirty per cent. for duties and charges on $18,385,327 of imported cottons, amounting to $5,515,598, should be added to the amount of manufactured cottons imported and entered for consumption, making the actual cost $82,649,824.

Manufactures of American cottons exported in the year ending June 30, 1854 :

Cotton piece goods, printed and colored...	$1,136,493
Do.....do.....uncolored.....	3,927,148
Do...thread and yarn.....	49,315
Do...all manufactures of.....	422,560
	5,535,516

Manufactures of American cottons exported in the year ending June 30, 1855 :

Cotton piece goods, printed and colored.....	$2,613,655
Do.....do.....white or other than duck	2,793,910
Do.....do.....duck.	113,366
Do.....all other manufactures of.....	336,250
	5,857,181

A correct estimate cannot be made of the amount of the various manufactures of cotton in the United States, no attempts having been made to collect information of that branch of manufacture. The production of prints is ascertained from the number of printing establishments, and their probable weekly productions. The average weight of prints is about six yards to the pound, 34 yards in each piece, 28 to 30 inches wide. Imported prints, 4¼ pounds to the piece of 28 to 29 yards, and 27 to 28 inches wide.

By the treasury report on commerce and navigation, for the year ending June 30, 1855, cotton goods imported into the U. S. for consumption, exclusive of duties, is.....$18,385,327
Add to this the amount of American manufactures... 64,606,080

82,991,407
Less amount exported, American manufacture..... 5,857,181

Total home consumption..... 77,134,226

American manufacture of cottons, according to annexed statement, is $64,606,080. Cotton manufactures imported for consumption, of $18,385,327, exclusive of duties. The proportion of American manufactured cottons will be 64 millions, to 18 millions imported.

Within the last four years great improvements have been made in all the departments of the manufacture of cotton, and no doubt, will continue to be made; and in a few years there will be manufactured in the United States a great proportion of the finer articles now imported. The statements of the manufactures of cotton in the U. S. are made from the best information that could be obtained.

There is a great difference in the dyeing materials used in dyeing madder or fast colors and the drugs used in the fancy or fugitive dyeing. Madder is not used in fancy dyeing, but mostly extracts from dye-woods, berries, barks and cochineal. Those drugs give a brilliant but not durable color.

List of printworks in the United States, and the number of pieces per week by each.

Name of works.	Pieces per w'k.	Place.
Cochico	8,000	Dover, New Hampshire.
Manchester	8,500	Manchester, Massachusetts.
North Adams	2,000	North Adams, do.
Merrimac	12,000	Lowell, do.
Hamilton	9,000	Lowell, do.
Pacific	12,000	Lawrence, do.
Hamilton	8,000	Southbridge, do.
American	8,000	Fall River, do.
Globe	9,000	Fall River, do.
A. Robeson	3,000	Fall River, do.
J. Dunnell	11,000	Rehoboth, do.
P. Allen & Sons	12,000	Providence, Rhode Island.
A. & W. Sprague	11,000	Cranston, do.
G. W. Richmond	7,500	Providence, do.
Schroeder	5,000	Smithfield, do.
Compton	4,000	Warwick, do.
S. S. Greene	3,500	Warwick, do.
East Greenwhich	2,500	East Greenwich, do.
Wm. Larcher	2,000	Johnston, do.
Gardiner & Co	15,000	Wassinger's Creek, New York.
R. Rennie	5,500	Lodi, New Jersey.
Belville	8,000	Belville, do.
Trenton	4,000	Trenton, do.
D. & G Brown	6,000	Gloucester Point.
Briggs & Co	8,000	Philadelphia, Pennsylvania.
J. B. Wilbur	4,000	Pennyrack, do.
Hunter	6,000	West Philadelphia, do.
Chesnut Hill	3,000	Chesnut Hill, do.
Total	197,500	

Average, 34 yards per piece when finished, equal to 6,715,000 yards per week of printed and dyed goods, at 50 weeks per year, equal to 335,750,000 yards; average price, 7¼ cents per yard, equal to $25,181,250; of this amount $2,613,655 was exported, including de laines, which are part cotton. The average number of cotton yarns spun in the United States is 30 to 32, usually termed low numbers.

From a tabular statement of the drugs used in printing establishments, it appears that much the greater part is of American production. Madder, one of the most costly items used in printing, is imported from France and Holland.

ARTICLE II.

The Polar Sea.

BY PROF. THEO. C. HILGARD.

The present cold spell affords an appropriate occasion to consider the causes and relations of climatic coldness under some points of view offered by modern researches about the gulf-streams of the globe.

Owing to the globular shape and oblique position of the earth, both polar regions are only obliquely touched by the solar rays, and for a season altogether precluded from their genial influence. An enormous cold is the consequence. More heat is developed on rigid than on fluid, more on opaque than on transparent matter, more on the surface of the lands than on that of the seas. The northern hemisphere being provided with more land than the southern, it evolves more heat. This is certainly one of the causes that produce warmer climates north than south under corresponding latitudes. Another great cause is the conveyance of tepid water —the gulf-currents—into the northern polar sea, that almost circular basin of sea-water, confined between the Asiatic and American continents' north coasts, while near the southern pole snows and ice eternal being piled on a forlorn continent, no compensation of temperature through drift-water can take place except on the outskirts of that inhospitable desert of ice.

The comparative compensation of cold and warmth, by means of a polar sea in connection with the oceans of warmer zones, is one of the most admirable means of rendering the northern bulk of lands rather temperated from excesses of both cold and heat. The gulf-stream, from its seat near the equator, of whose rotatorial velocity it originally partakes, by colder and heavier undercurrents dislodged poleward, by inertia retains much of its previous velocity of movement from west to east. The higher latitudes describing a smaller circle within 24 hours partake of less velocity. Thus the equitorial waters, in shifting pole-ward, by inertia retaining a relative rush from west to east, while undergoing a south-north shift, a north-east rush is the compound effect, while the motionless water of the north pole, undersea shifting towards the parts that have an enormous west-eastern rotatorial sway—by their inertia retain a certain degree of immobility, or a comparative motion contrary to that of the latitude it enters. Thus the cold under-

current on the northern hemisphere must become manifest as a south-western or retrograde current, which, rising up to the surface near the equatorial region, causes a well-known current from east to west, and an almost uninterrupted circle of currents is the result. Thus we find, both in the Pacific and in the Atlantic, a superficial warm current from the western coast of either sea towards the north-east, and there is a cold undercurrent from the outlets of the polar sea to the south-west. We have both a Pacific and an Atlantic gulf-circle north of the equator.

On our Atlantic coast we have the gulf-stream pursuing a north easterly direction, and a cold south-west current from the northern passages pursues it down in a south-west direction, diving under the warmer and lighter gulf-current as they meet. This cold countercurrent is known at once to bring down a supply of fish and of cold, also of drifting ice from the glaciers of Polar America—the famous icebergs.

The American gulf current is known to be partly reflected at the coasts of Britain and Scandinavia, doubtless by contact with the polar under-rush that follows a north-western direction. The gulf or warm water keeping the surface, it diffuses a genial and equal warmth along the coasts of the old continent. A glance at the *Globe*, (maps are not so instructive, on account of the distortions by flat representation,) will suffice to show that a vast deal of the gulf current, once in a north-easterly motion, continues its course into the Polar sea, carrying a supply of heat from the torrid zone along the circular coasts of Siberia, which it frees of ice. Behring's straits—by their narrowness and obstruction, through the the Aleutic archipelago—affording but a poor outlet, the Polar current will drift out of Baffin's and Davis' straits, under press of the gulf current coming aft, and also out of the passage between Greenland and Scandinavia, as a cold under-current, the warm gulf drifting on top, the latter drifting partly along with it to the south, partly contrary to it diffusing itself in the Polar sea.

It is thus that the great store of cold, on which our winter draws for snows and blasts of dreariness, is hoarded at the northern *coasts* rather than ocean, the cold waters being replaced by warmer currents that mitigate the cold inherent to those regions from their deprived terrestrial position.

Within the records of modern history, Greenland has been overrun by perennial frost, and our own climate demonstrates a de-

crease of heat, by the fact that a whole autumnal vegetation at large is killed by frost, instead of a gradual decrease of vegetative action. This might be urged as a proof that our vegetation dates from times that knew less of sudden frost supervening, but where mild weather uninterruptedly continued into a mild winter, not as it is now, with those spasmodic fits of early frost and snow that deaden verdant life. Indeed we cannot but assume it as a fact, "green-land" having turned to be an ice-land, *within hearing*, as it were.

What might be the cause of this astonishing fact? We know that but for the ingress of warm currents into the Polar sea, the northern lands would be productive of a marvellous degree of cold from natural and evident causes. A decrease of warm in the polar sea, and especially along the Polar coast of America, at once suggests the idea of a change of currents having supervened. There is no cause averrable to any recent deflection of our Atlantic gulf-current, and chiefly to it we must still attribute what warmth may be carried to the desolate shores of Siberia and Hudsonia, confining the Polar basin in more than three-fourths of a circle much within the Arctic zone.

What supply of warm currents has our northern coast been deprived of within historical times? The fact is, that if the Pacific gulf current, following up its north-easterly direction through Behring's straits, washed Hudsonia with its tepid waters, and as a stream less refrigerated than at present came down Baffin's and Davis' strait, it would afford a warm climate to Greenland, heightening the common temperature of the Polar sea, and thus affording a hospitable character to both Siberia and Hudsonia. But we see the Asiatic gulf current in a large sweep deflected toward the American coast of the Pacific, affording to Oregon the warmth it might otherwise have derived from the mildness of the Polar sea. It is evident that nothing short of an undersea upheaval of a chain of heights could have deflected so powerful a stream. The volcanic chain of archipelagoes, from the Indies up to Kamtschatka, apparently offer no obstacle, as they follow the same sweep. Not so its continuation, from Kamtschatka through the Aleutic archipelago and the American peninsula of Alaschka to Mt. St. Elias. It is in this active chain that very recent upheavals of islands or submarine peaks have taken place within historic record, and it is but consistent to attribute to them the sudden refrigeration of our

northern coasts, the warm current that must have washed them being deflected from their natural course into the American Polar sea.

As to the geological effects of gulf-currents and their translocations, the following might be observed. The coasts on which the currents strike, namely the western coasts of continents, all present considerable chains of mountains, while, toward the east, continents expand like the beard of a pen, and their eastern coasts, where the currents run to the north-east, follow the same course, which affords some hints at the former action of such streams, like those of paradise, flowing in circles.

Necessarily a polar drift of icebergs must have taken place. The icebergs partake much of the nature of glaciers formed on land by snow fritted into ice by warm winds and slowly shifting toward the valleys, carrying in their slothful course huge boulders of fallen rock, that unlike *rolled* masses preserve their antique shape pretty much, but in token of their mode of conveyance bear the unmistakable runics of straight and severe *scratches* on their rather *ground* than rounded surface. The icebergs consist of detached glacierial masses, projecting into the sea, and when underwashed and burst by expansion, they are borne along by the polar current, and finally committed to the gulf stream. It is but natural that the rocks they thus far conveyed are not so much "dropped in the green-wood dale" as in Switzerland and other glacial countries, but dropped head-long into the flat and sandy deposit of the gulf-current that receives and melts their floating piles, as the Polar current by its weight dives under the warm gulf, delivering up its uncouth passengers to the soft mercies of the latter, that plunges them down in a line itself pursues, a memorial to posterior times of its primeval existence and direction. This is the correct explanation of the long but desultory lines of *erratic blocks* strewn in the flats of northern Germany and our prairies in a north-east flight, boulders of distant origin and glacier testimony, but not disposed in compact walls as along the foot of Alpine glaciers, but dotting out the melting-lines and drift of Polar ice on the warm north-easterly currents.

It is thus that the pristine globe is at once saved from the supposition both of having been so intensely *hot* as to be able to foster the palm and the mammoth in what are now the frigid wastes of Siberia, and of having—by some comet-like eccentricity—been brought into such aphelion as to become covered with glaciers ex-

tending to hundreds of miles from any chains, that moreover—like the Norwegian alps—have quite another direction. The formation of glaciers require tepid winds. Where there are glaciers now-a-days, they have an incredible power of grinding valleys into solid rock, while the erratic messengers lay deposited in extensive flats, like the submarine one now extending between Nova Scotia and northern Europe.

The comparison of such primeval gulf-currents would afford as interesting a study of primeval geography and climatology as the knowledge of marine and atmospheric phenomena affords respecting our present interests of existence and commerce. As to the practical consequences to be drawn from such facts, none can foretell what scientific and practical bearings they will ultimately assume, while it is certain that the efforts of man have always not a little contributed to modify the special character of climates.

The temperating effect of southern water-courses into the Polar sea are well known. We speak of the great rivers that flow from south to north into northern seas, as does the Nile, imparting warmth to the Mediterranean, that hot-bed and circulating stove to heat Europe, as do the Seine, the Rhine, the Vistula in Europe, tempering the waters of the great northern channels and inlets, and in Asia its northern mammoth rivers. The south-bound Russian rivers carry cold to the Black Sea, which has been known to freeze, although under the same latitude as the Gulf of Biscay. The northern coast of Asia, although in an average considerably more northerly than the American polar coasts, are less beset with ice, which caused them to be the earliest of them that were explored. One cause evidently is the branch of the Atlantic gulf-stream, only partially deflected by the towering coasts of Norway, and partially issuing into the Polar sea, in the direction along the Asiatic coast. But then there are the north-bound rivers of the White sea in Lapponia, there are the Asiatic Mississippis, the Obi, Jenisei and Lena, and many large rivers, all of the same northward course. No ice drift from above chokes up the rivers before their time, but rather melts and floats into the sea the masses congealing toward the mouth from the local rigor. The only large river of such character *Hudsonia* possesses, is the Mackenzie, and its influence is known to be striking, in keeping those coasts relatively free from ice, while the coasts near Hudson's Bay, although considerably receding to the south, almost as low as the Polar circle,

are hemmed in with ice. There are no meridianal water-courses emptying into it, except the Moose river, entering James Bay and connecting with Lake Superior. The Saskatchawan comes from the west. The St. Lawrence, too, has an eastward course, and serves to distance the gulf-stream from our Atlantic coast. If the neck of Nova Scotia, which receives such an uncommonly high (up to 40 feet) tide wave, were tunneled, the rush of that wave, its mass and velocity might serve to deflex the Lawrence to an ancient outlet, namely between New Foundland and Labrador—the strait of Belle Isle, and an amount of warmth now dissipated into the wide ocean might serve to render the waters of Labrador more temperate. Again, if Lake Superior, which has the same elevation above Hudson's Bay as above the Atlantic, had through a region abounding in a succession of smaller lakes and portages—the U. S. boundary — found an issue into Lake Winnepeg, thus somewhat draining itself and the neighboring lakes into Hudson's Bay, a considerable change of climate might take place by freeing Hudson's Bay from ice. And such a work might not be out of human feasibility. Supposing it would in this outlet grind itself a bed sufficiently deep, more or less, to lower its surface, Lake Michigan, whose bed is now so little above the Illinois river as not to furnish a sufficient fall for supplying that river with water,—Lake Michigan, we said, might become the *receiver* of the Illinois river, which would divide its waters into a northward and a southward drain, as the head-waters of the Orenoko do, forking on the one hand into the river that empties into the Caribbean sea, and on the other into the branch that flows into Rio Negro, tributary to the Amazon. If the level of the lakes was sufficiently reduced by a northward outlet of Lake Superior, the St. Lawrence would loose much of its power against the gulf-stream, and the waters of the west might subsequently present the sublime spectacle of dividing its huge flows into a southward branch to the tepid coasts of the gulf, and into one to gelid Hudsonia, no longer a bank of snow and ice for wintry gusts to draw upon, but affording a temperate and perhaps a habitable climate. Already Illinois river is in connection with Lake Michigan; Lake Superior will in future times, through a canal from Arrow Lake, be navigably connected with Rainy Lake, the Lake of the Woods, and Lake Winnepeg, perhaps also with the tributaries of Mackenzie river, and the neck of Nova Scotia has before now been proposed to be tunneled through. He who shall live, shall see.

Illinois, February, 1855.

ARTICLE III.

St. Louis Mercantile Library Association.—Tenth Annual Report.

There is no public institution in the valley of the Mississippi which reflects more honor upon its founders than the Mercantile Library of St. Louis. It is but little more than ten years since this association was formed, and within that short period, without any endowment except occasional contributions of books and works of art, it has attained to a degree of usefulness and respectability of which the citizens of St. Louis may well be proud.

The edifice erected by the St. Louis Mercantile Library Hall Company, at a cost (including the ground,) of about $140,000, is well adapted to the purposes of the association, and is a splendid monument attesting the public spirit and munificence of the Saint Louis merchants.

The following extracts from the tenth Annual Report will show that while St. Louis is advancing in commerce and manufactures, its citizens are not unmindful of the profit and pleasures to be derived from mental culture.

MEMBERSHIP.—The number of members reported at last annual meeting was 1,005; since that time we have gained 347 new members, and lost by death, removal or withdrawal 195—leaving a net gain of 152; and it is one of the most gratifying facts connected with the history of the past year, that there has been a marked decrease in the number of those who have refused to renew their subscription—a sign of increasing interest in the prosperity of the Association, and some evidence that it is fulfilling the object of its formation.

We have now 1,157 members, viz:

Life members	159
Proprietors	283
Clerks	447
Beneficiaries	268
Total	1,157

LECTURES.—In compliance with his promise to the previous Board, Bayard Taylor visited us in March, and delivered three lectures, as follows:

March 13, India.
" 14, Philosophy of Travel.
" 15, The Animal Man.

The receipts from these lectures amounted to $517 35. Expenses $325 25; leaving as profit $192 10.

Early in the year, the Lecture Committee were authorized to invite a number of distinguished lecturers, and we were much in hopes to have received a course of Miscellaneous Lectures, that would have been acceptable to the public, and at the same time put money into our treasury. The Committee found it impossible to arrange a satisfactory course, as of the many invited, the Hon. Jno. P. Kennedy, of Baltimore, was the only one from whom they received a positive acceptance of their invitation. Circumstances which he could not foresee or control, prevented Mr. Kennedy from visiting us at the time appointed, but we hope he may be able to fulfill his promise during the coming season. Finding it not practicable to arrange for a Miscellaneous Course, the attention of the Board was directed to the securing a course of scientific lectures, and after much correspondence a contract was closed with Prof. Silliman, Senior, for a course of Twelve Lectures on Geology, for which he was to be paid twenty-five hundred dollars. This arrangement was only entered into after consultation with many members of the Association, for we were satisfied that the price to be paid was too large to allow of a chance for much pecuniary profit from the sale of tickets, and might entail a loss; but as for a number of years there had been on the part of the community generally a strong desire expressed to hear Prof. Silliman, and as this was the first time he had consented to come at any price, it was thought best to secure him, and the first lecture was fixed for Tuesday evening, November 6th,—course to be continued on the evenings of each Tuesday, Thursday and Saturday until completed.

It is with great regret we are compelled to announce that the result of this course was far from satisfactory. This was owing to several causes — the terrible catastrophe of the Gasconade on the 1st of November was of so recent a date as still to completely absorb public attention. A course of lectures before the Young Men's Christian Association was announced for the same time—a portion of them for the same evenings. These two causes combined to prevent a large sale of season tickets; but the main reason why the course was a losing one, was in the simple fact that people could not hear the lecturer; he could not make himself distinctly understood by his audience, and a majority of those who bought single tickets for the first lectures did not return again, and by their report deterred others from coming.

The receipts from Prof. Silliman's lectures were $1,483 30,—the expenses $2,752 16, showing a loss of $1,268 86. This sum we were enabled to make up by voluntary contribution from your friends, thus preventing any actual loss to the Association. At the solicitation of some of our members, Prof. Silliman consented to give another lecture upon the Geology of our own State, but more particularly referring to the mineral resources of St. Louis

and its vicinity. This lecture was delivered on Tuesday evening, December 4th; the receipts were $56 75, and as it was entirely gratuitous on the part of Prof. Silliman, the whole of this sum, less the expense of advertising, came into the Treasury.

The Lecture Committee had great hope of securing a course of four lectures from Mr. Thackeray, but learned, late in the season, that he could not come West before Spring. The committee did not deem it advisable to make an engagement pledging their successors, and the matter was left open for the action of the next Board. We had the promise of a lecture from the Hon. Edward Bates, and we feel sure that Mr. Bates would have taken much pleasure in fulfilling his promise, but for the unfortunate accident by which he was lamed so severely as to prevent his attendance to his own professional duty.

Books. — Since the date of the last annual report, we have added, by purchase, 714 vols., for which we have paid $1,285 19. In this we do not include the books bought to replace those that were burnt. Donations of books during the year amount to 433 vols., valued at $350 45. The whole number of volumes added is 1,147, so that, according to the records, the total number of volumes belonging to the Library should be 13,089.

The last Board of Direction reported 161 vols. as missing, but thought the majority of them would be found. Unfortunately, this does not prove to be the case, and a complete and thorough examination made at the usual time discloses the fact that there are missing 261 vols., which cannot be accounted for; for a list of the missing books we refer you to the report of the Examining Committee, which can be found in the Record Book.

We see no way by which this loss of books can be prevented but to lock the cases, so that books could not be taken, save as issued by the Librarian, and let him be wholly responsible for their safe-keeping. We are aware, that in the present incomplete state of the catalogue, this would prove a serious annoyance to the members—but trust, that during the coming year, the new Board of Direction may be able to remedy this defect in the catalogue, and thus preclude the possibility of reasonable objection on the part of those using the Library.

We have the pleasure of recording a very marked increase in the number of readers, and of books issued; during the year 15,219 volumes have been issued to 1,021 readers; an increase, as compared with the previous year, of 151 readers, and 4,236 volumes issued. Want of means prevented our purchasing many rare or costly works, but among a number of others worthy of notice acquired during the year, we find the following:

Domesday Book, 2 vols, fol., 1783.

L'art de Verifier les Dates, 43 vols., 8vo, 1819–42.

Tillemont's Memoires pour Histoire Ecclesiastique, 16 vols., 4o. Paris, 1693–1712.

Charlevoix's Histoire du Japan, 6 vols., 12v, Paris, 1754.
A new copy of Waverly Novels.
A new copy of Cooper's Works.
Zachary Grey's Hudibras, 2 vols., 8v., London, 1744.
Norton's Evidences of Genuineness of Gospels, 3 vols., 8v.
Llorente's History of the Inquisition in Spain, 8v., 1827.
Cavendish's Life of Cardinal Wolsey, 2 vols., 8v., London, 1825.
Waagen's Treasures of Art in Great Britain, 3 vols., 8v., London, 1854.
Diplomatic Correspondence of U. S., 1783–1780, 7 vols., 8v.
Friend's Library, 14 vols., Philadelphia, 8v., 1837–50.
Rochefort's Histoire des Antilles, 4v., 1665.
New York Presbyterian, 1833–1854.
Molina's Vocabulario in Lingua Mexicana, 4v., Mexico, 1571.
Oeuvres Completes de Saint Pierre, 17 vols , 24v., Paris, 1828.
Gespraeche in dem Reiche der Todten, 17 vols., 4v., Leipzig, 1720–40.

Through the kindness of one of the members, Mr. W. C. Marsh, we intimated to his brother, the Rev. Dwight W. Marsh, Missionary at Mosul, that the Association would esteem it a privilege to possess some of the remarkable relics that were being excavated from the ruins of Niniveh, our application met with great success, and by the following letter received from Mr. Marsh, you will learn that yours, one of the youngest institutions in the New World, is likely soon to be placed in possession of an evidence of the state of art in the oldest community of whose existence we have a record:

MOSUL, Thursday, August 9, 1855.

To the President of the Mercantile Library Association, St. Louis, Mo.

Dear Sir: I learned from my brother, that the Mercantile Library of St. Louis would be glad to procure one of the remarkable relics of Assyrian glory. There are now slabs from Nimrood in Yale, Williams and Amherst colleges, and others on way for Dartmouth, Amherst and Williams, and the Connecticut Historical Society, at Hartford.

The sculpture for St. Louis is what is called a *Cone* figure, from the cone held in the right hand, is of heroic size, and is winged like Ezekiel's Cherubim—a fine specimen of these wonderful ruins. The border of the sacred tree for each side add much to its value. It is contained in five cases, marked St. Louis, and numbered and consigned to J. M. Gordon, Esq., Missionary House, Boston, or A. Mervin, Esq., Bible House, New York, for A. Vinton, Esq., or C. W. Marsh, St. Louis.

These boxes left Mosul July 23d, by a caravan of about a thousand camels, through the Desert, for Alleppo. The cost of the sea coast has been $57 76. There will be probably a small charge at the sea coast, possibly the ocean freight may be paid on this side.

As soon as I learn, I will inform you. The vessel may reach Boston or New York in January. We rejoice greatly in having procured such valuable specimens for the United States, and I think you will admire these sculptures, if they reach the United States safely.

Hoping that your Association may be crowned with abundant success, I remain your obedient servant,

DWIGHT M. MARSH.

The Hon. H. C. Carey, of Philadelphia, having been informed that we were without a complete edition of his works, with a prompt kindness which we highly appreciate, immediately sent us the volumes lacking.

From the Society of Friends, Philadelphia, we have received a donation of 47 volumes, that from their intrinsic worth, form a very valuable addition to your library.

To Wm. M. Morrison, Esq., we are indebted for several documents of great interest, as forming part of the Territorial History of Missouri, and also for a number of old bank bills, curious specimens of engraving and typography.

Mr. Ives, Librarian of Young Men's Association, at Buffalo, has presented us with two autographs of Aaron Burr, of great value as mementos of a remarkable man, whose name is closely identified with the history of this valley.

A number of friends have presented to you a fine bust of our highly esteemed fellow-citizen, M. Tarver, Esq., senior editor of the Western Journal and Civilian. It is the work of that distinguished artist, Col. Waugh, and in its execution does full justice to his high reputation.

You are under obligations to Jno. C. Powell, Esq., for a donation of ten shares of stock in the Mercantile Library Hall Co.

Wm. Anderson, Esq., has presented you with a revolutionary document of much interest. It is an address to the Merchants of Philadelphia in reference to the non-importation of goods from Great Britain during the continuance of certain acts of Parliament, and is dated 25th April, 1768.

The statue of Webster, presented to you by Henry D. Bacon, Esq., arrived early in the Spring, and was safely placed in its present position. It was a magnificent gift, worthy of the giver. It is said to be a very correct likeness of the great statesman as he appeared in his latter years, and competent judges have pronounced it an exhibition of artistic skill that reflects great credit to the genius of the sculptor, Mr. Louis Vanderhaegen. From its intrinsic merit, and the undying fame of the subject, it must ever be a prominent object of interest, and after generations will mention, with words of warmest praise, the name of him by whose munificence the speaking marble transmits to them the lineaments of one whom the whole world honored while living — whose death a nation mourned.

The resolutions adopted at the last annual meeting, expressive of your gratitude to Mr. Bacon, for this and many other evidences of his friendship, were duly sent to him. We also preferred your request that he would cause his portrait to be painted at your expense, in order that it might be hung in the Library Room, a memento of your gratitude to the man who pecuniarily had done more than any other towards advancing your Institution to its present high position. In his reply to our communication, Mr. Bacon expressed himself as highly honored by this mark of your appreciation, and promised a compliance with your request as soon as his business would permit. We understand the portrait has been commenced, but circumstances have delayed its completion. We trust, at another annual meeting, it will grace our walls, and hope that long ere that the sun of returning prosperity will have dissipated the mists which obscure the fortunes of one who has proved himself so much the friend of your Association.

You are indebted to E. R. Mason, Esq., for a magnificent bust of Columbus; it is of the finest Parian marble, and from the studio of an eminent sculptor at Rome. You are indeed fortunate in thus possessing such lasting memorials of those whose names are inseparably connected with American history. Works of art, objects of curiosity, or relics of antiquity, are at all times acceptable gifts to an institution like ours, and should be received with lively gratitude; but more especially should we cherish those things which, appertaining to the history of our own country, speak to us of that history, and, reminding us of the virtues or errors, social or political, of those who have gone before us, point the way to emulate the one or avoid the other.

At the date of the last annual report you owned ten hundred and eight shares of the stock in Library Hall Company, par value ten thousand and eighty dollars; since then there has been acquired in exchange for membership 436 shares, and by donation ten shares, so that the Association now owns 1,464 shares, or $14,640 00 of this stock.

Your gain in property during the year is, in books and periodicals $1,585 34. Works of Art, $3,725; Stock in Library Hall Company, $4,560; Furniture $1,962 74; in all, a total gain of $11,833 08, and the Association is entirely free from debt, except in its connection with the Library Hall Company. The value of your property as reported by the last Board was $34,681 02; to this add the gain of the past year, $11,833 08, and you have a total of $46,464 10, as the value of your property at the present time.

With this report closes the official history of the first ten years of your existence as an Association. It is a history of which you may well be proud. But a single decade, yet how fruitful in great results accomplished, and the partial achievement of others grander still, for the completion of which there is fair promise. The germ

of this hope is already in the bud; it is for you of the present time to say whether the bud shall wither or blossom unto fruit. The strongest hopes of the most sanguine among that little group which ten years since resolved that it was expedient and proper that a Mercantile Library Association be formed in this city, could not have shadowed forth to his imagination the exhibit of this evening. — A membership of nearly twelve hundred, the noble library room, so brilliantly lighted, so comfortably furnished, and the splendid book cases well filled with good books; painting and statuary, too, are yours, the conceptions of genius from many hands and various countries are around you. From imperial Rome comes the bust of the great discoverer of this mighty continent, while by its side a St. Louis artist places the image of one who has done your own State good service; and standing in the centre of all these, is the life size image of him who won for himself the proud title of the Great Defender, and as it is, that at the expiration of the first ten years, your institution commencing with nothing is the owner of property valued at forty-five thousand dollars. Whence came it? How was it acquired? There was no rich endowment, yielding its annual income, to be thus expended, but each board of directors found themselves at the commencement of their official term with an empty treasury and entirely dependent upon public favor for the means to carry out their plans, and it is solely owing to the large spirited beneficence of our citizens that your Association has made such progress—a progress without parallel in the history of any similar institution. The glow-worm light of its first existence, faint and glimmering as it was, has steadily increased each year, burning brighter and brighter, until we have now the effulgent beacon scattering its beams far and wide, lighting the paths of numberless seekers after knowledge. See ye to it that the lamp lacks not for oil, and that none but careful guardians are appointed to watch its trimming.

Respectfully submitted on behalf of the Board,

JOHN T. DOUGLASS, President.

ARTICLE IV.

Report on the "Overland Mail" from Missouri to California.

The Legislature of Missouri has incorporated a company of the citizens of our State, to accomplish direct and constant connection with our fellow-citizens in California. The distance which separates us is about two thousand miles. This is, for the most part,

a wilderness, having isolated settlements in Kansas, Utah, New-Mexico, Nebraska and Oregon. This wilderness presents no physical obstacles of any great difficulty to surmount, only its present destitution of inhabitants, habitations and forage. The topography of the surface is most favorable, being level and dry; the climate still more so, being free from rains, snows and the humidity which accompanies them; and in consequence, wonderfully salubrious. Since the year 1843 a wagon road has existed, whereby many thousand vehicles, and perhaps one million of persons, have passed across the Continent. Regiments of troops of the Federal Government have crossed. Imperfect mail conveyances exist from the city of Salt Lake both to Missouri and California.

When it is remembered that on this side of the wilderness there is a population of nine millions in the valley of the Mississippi, and six hundred thousand beyond on the shores of the Pacific, and this wagon road opened since 1843, and traveled by our people, your committee ask, why there are here none of those accommodations for mails and travelers which are elsewhere universal, and the first care of the government? The mail service for 1854, in mail coaches, amounts to 20,890,530 miles, costing $1,092,833. This includes many routes, such as that has been from the extremity of New England to Independence, of greater length and traversing more rugged countries than this now proposed. Why a mail of such national importance, regularly established by the Department, does not now exist, must be accounted for by causes other than the distance, or any physical difficulties that beset the route. This service *done* daily, would amount to 1,460,000 miles, at a cost of $500,000 per year. Yet no American mail traverses the continent in the immense space from Panama to the Arctic Sea: none exists here, or ever has existed, through our own domestic territories. More than this, every effort to establish such a one has been stifled at Washington, and often upon hostile reports fabricated, as your committee believe, to mask arbitrary and arrogant rejection.

Whilst, however, such is the astonishing neglect of essential home affairs, mails *outside* of our country, upon the *sea*, have been multiplied, and costly systems of transportation for travelers sustained from the federal purse.

This system, partly naval and partly postal, embraces four lines of sea-going steamers:

1. Collins' line from New York to Liverpool.
2. Line " " " " Bremen.
3. " " " " " Havana and Vera Cruz.
4. " " " " " Panama, Califor. & Oregon.

"The cost of this service for the fiscal year 1854, on the several U. S. Mail steamship lines, and across the Isthmus of Panama, is as follows:

New York to Liverpool, Collins' line, 26 round trips,	$858,000 00
N. York via Southampton to Bremen, 11 round trips,	183,333 26
N. York via Cowes to Havre, 11 round trips.....	137,500 00
New York and New Orleans to Aspinwall, 34 round trips, including 24 round trips between New York and New Orleans via Havana.....	289,000 00
Astoria via S. Francisco to Panama, 24 round trips,.	348,250 00
Charleston via Savannah to Havana, 24 round trips,.	50,000 00
New Orleans to Vera Cruz, 24 round trips.....	37,200 00
Aspinwall to Panama.....	119,727 03
Total.....	$2,023,010 29

Behold the *annual* cost of five *semi-monthly* mails upon the sea, being single mails going the whole distance outside of our country and people, having no way-mails, and accommodating no State, Territory or people upon the route! — This sum multiplied into a few years reaches very many millions of dollars. But when to this is added the cost of the fleets which guard these routes upon the Atlantic and Pacific oceans — the expensive diplomacy and agencies expended to establish and maintain them—the various incidents and miscellaneous expenses, your Committee estimate that a *bonus* of fifty millions of dollars has been paid by the federal government to this outside sea system of mails, during a period of less than ten years!

Such is the contrast which your committee have to submit; absolute neglect of, and hostility to, the *inland* route; enormous partiality to the *outside* routes by sea.

Your committee designing to be succinct and just, but absolute in the exposure of facts, submit this illustration. The immense shock which would be given to our State, were the federal government to withdraw from us the present system of mail and other transportation connecting us ultimately with the Atlantic seaboard in our front, is manifest at a glance. To compel us in Missouri, by an arbitrary policy, to have no other communication with New-York than by the river to the Gulf, and thence by sea; to assume that steam upon the water is rapid and cheap; that coaches upon the land are slow and costly, would exasperate every citizen by its absurdity. Yet this is done, when our mails and people are sent by New Orleans, (even by New York,) and Panama to San Francisco and Oregon, ten thousand miles of circuit by sea, instead of going through by land coaches, only eighteen hundred miles! In fact, if the position of our people be appreciated in a sense of general justice, the absence of *direct* outlet to the ocean by the *West*, is a hardship arising to the dignity of the severest national calamity. Within the Basin of the Mississippi are nine millions of the American people, and upon their neighboring ocean front of the Pacific *six hundred thousand* more, sprung from them. An intervening wilderness of one thousand eight hundred miles sunders

from one another these immense fraternal populations. This unhappy divorce, so dangerous to a *perfect Union*, and depressing to progress and commerce, is caused and perpetuated by the partial rigor of the federal government. This does now, and has for a whole generation, so favored maritime interests and extension, that the country central to so many populous States and Territories is a blank, and overland travel has shriveled beneath its blight.

Your committee consider as too intimately connected with this subject to be omitted, the extension of population across the central belt of the continent; the commerce consequent upon it; the transfer of gold, and the constantly swelling current of exports and imports. These all await the initiatory step which it is the object of this company to make now. Past delays have shown more than sufficient time to have been given to meditation, and has ripened all things for action.

Gold is an existing element. The gold current which sets around the world is, at present, over the *sea*, and passes outside of America, by way of Panama to New York and London. This may be rescued from the ocean, and brought to pour itself through, and bisect with its enriching freshness all the Territories and people of our Union. Another *gold* stream sets from Australia and Oriental Asia to London, by way of the Mediterranean and Cape of Good Hope, which may be likewise deflected into this channel. It is estimated that the specie thus always *in transitu* in bulk, amounts to $175,000,000 per annum! Our central region of the Union, now shut off from its benefits, will, by this change, become the first recipient and permanent channel of this concentrated artery of the riches of the world! What now passes over the sterile sea, *outside* of our country and of society, will be deflected *inside* to diffuse itself over our fertile Territory and still more fertile population.

To bring out in bold relief how *artificial* is the impression pervading the public mind, that the exclusive sea route to California is in any view adequate to the public wants, consistent with the general economy, or calculated to supercede land mails or transportation either in cost or accommodation, we submit this comparative statement of where the chief work of society is required and how it is done.

The *imports* arriving by *sea* are received and distributed by the system of inland transports; so likewise are all exports gathered to the seaports by this same inland system. The *inland* system is therefore required to be equal in capacity and has the same quantity of work to do as the sea transportation. But the inland system has the additional task of transferring to and fro what is interchanged and consumed between different parts of our country. Where a territory is large, like that of the American people, this inland transportation requires to be three or five, or even more

times greater in amount than that upon the sea. Without it countries so remote from the ocean, as Missouri, derive no benefit from foreign commerce and are cut off from its enjoyments. It is, therefore, a first essential and paramount duty of good governments to recognize and early provide for the necessary inland mails and commerce, where it has been paralyzed by delay or obstructed by neglect.

The grand empires of Russia and China, embracing half the population of the world, have comparatively no commerce—they exist almost exclusively by inland and domestic transportation. We know the high state to which favorable legislation has elevated the *sea* commerce of the American people. It is necessary to bring prominently into view the immense expenditures liberally made to force *sea* commerce to its present strength and prosperity. A navy has been built and maintained at an aggregate cost of $800,000,000; foreign wars have been fought with the Barbary Powers, with Great Britain, and Mexico; the pirates of the ocean exterminated; an extensive diplomacy maintained; the old sea front of the continent fortified, surveyed, lighted within and without; taxations, bounties, drawbacks have been allowed and gauged to favor it. So great and unremitting have been the care and cost expended to nurse and protect the commerce and mails upon the *sea!*

Of late years, the government has found it necessary and wise to establish lines of steamers to convey mails and passengers over the ocean and to *foreign* countries. We have seen the enormous expenditure already made for these, yet propositions have been entertained by Congress to add to them other lines to Africa and Asia, at an aggregate outlay of $42,000,000. In contrast to this, the overland route has been refused both attention and justice.

Your committee ask, if it is not a just reflection, affirmed by all the precedents of history in Europe and Asia, that it is the barbarism and uncorrected lust for war and plunder, never in any age relaxed, that has driven the commerce of those continents to take refuge in the safety of the sea? The ownership of the American continent, and the perfect civic civilization of the American people, secures its safety and invites it again upon the land. A policy favorable to this change will be in accordance with the true destiny of our country.

It is manifest that emigration immediately through the *central* belt of the continent, between Missouri and California, will now become intensely active, consequent upon the removal of the prohibition to settlements heretofore incidental with the Indian barrier. This prohibition, existing for forty years, has caused the extension of States and Territories along the extreme flanks of our national domain, and kept the CENTRE an unoccupied blank. Hence this prolonged *delay* of justice. Hence this accumulation of people isolated on the outflanks of the Union, and this deficiency in the centre; and hence the uneasy and distressing turbulence which ac-

companies the decay of a universal fraternity among our people. The whole weight of our population of thirty millions now surrounds this central wilderness, pressing upon it with a concentric movement, and urged forward to its occupation by the irresistible instinct of progress. Incalculable will be the impulse given by the establishment of this *overland* route, bisecting from east to west this sublime field of enterprise. A few seasons will suffice to fill out the zone of our States from ocean to ocean; to restore the harmony of our geographical balances, and hush the cry of distress which accompanies their prolonged interruption.

Your committee report from authentic sources that our people on the coast of the Pacific, both in California and Oregon, are animated by the liveliest zeal, and invite us to co-operate with them in this patriotic enterprise. They are zealous, unanimous, and at work preparing to meet us by advancing Eastward from the Pacific. To them, as with us, it is the first and paramount interest to connect and harmonize our mutual relations of society, of commerce, of progress; to obliterate the painful solitude which isolates the delicious Pacific shores from the neighboring valley of the Mississippi! In short, to be re-united with us in a straight line by land, and by routes, and through climates that are congenial.

Time has become an immense element in the economy of commercial interest, and by this route the shortest distance, and in time, the highest speed attainable, may be reached in combination. It is a propitious moment to call attention with emphasis, to the contrast above instituted between transportations within the *land* and that over the *sea*. The two greatest empires in territory, population, and consequently in transportation, are China and Russia, having an aggregate population of 450,000,000 and covering half of Europe and Asia. The *sea* commerce of these great masses is very feeble, not exceeding five per cent. of all, and the number of their sea-going ships is absolutely insignificant. Such is the case with Austria, Prussia, France, and the bulk of populous Europe. *America* is a continent, and not an island like Great Britain! A railroad performs in a single day as much work as a ship in a whole year. This is done, too, in the midst of society, internetted among the cities, the farms, the dwellings of the people. This department then, which has been overlooked by the American Government, ought to receive its chief and most constant care.

The Oriental commerce into Europe has always been by land, when sufficient civilization has existed along the route to protect it. Witness the routes through Egypt, by Palmyra, by Damascus and Aleppo, and by the Euxine. The countries of the Baltic are supplied from China, through Siberia and Russia. Behold this latter country, begirt by hostile fleets, and yet enjoying the commerce of China, safely traversing the great route from Kiachta to St. Petersburg. This route is five thousand miles in length, crossing Asia and Russian Europe, along the fifty-fourth degree of

latitude. The annual transfer of merchandize equals $50,000,000 per annum.

Is America less liable to be attacked than Russia, by those who aspire to monopolize the carrying trade of the world? Suppose war to break out with the powerful maritime powers of Europe! (and we are now told by the President that such is imminent.) The present outside *sea* routes will be at once swept away: the unprotected commerce and new States on the Pacific will be ravaged by sudden and overwhelming invasion; all opportunity of early succor cut off. Even news of these disasters will be prevented by the insurgent savages that infest the line of land communication. It is a pressing duty of the committee to point out to the people of Missouri and of the *central* States the intense seriousness of the calamities which a few weeks of war must inflict upon themselves and their fellow-citizens, dear to them, upon the Pacific coast, and to repeat that to them especially belongs the guardianship and responsibility of this neglected overland intercourse, and to rouse them to demand from the National Congress that ample legislation which justice cannot longer deny. The time, the necessities, the uses of this route have fully come, and are overripe for its establishment. Nothing exists in it different from the establishment of any other mail route of the first class, that should stagger the legislation of Congress or the action of the Post Office Department. It is of far less gravity and cost than any one of the *semi-monthly* steam lines established on the *sea*.

Your committee have collected from authentic sources reliable estimates, and report their ability to transport the mails and passengers between New York and San Francisco *overland* and *daily* each way in fifteen days, at an annual cost below that now paid for the *outside* sea mail, semimonthly, in twenty-five days! These statistics and data are presented as an appendix to this report.

Your committee have acquainted themselves with the topography, climates, pastures, and the character of the Plains, the mountains, and the table lands which have to be traversed. No obstacle exists which may not be overcome with familiar means. The routes radiating from Independence, one by the Platte, and the other by the Arkansas, are equally practicable. We do not submit any specific details of this, believing it absolutely established in the general mind. We cite the fact that California and Oregon were first occupied by emigrants going by this route: that a wagon road exists: that one million of travellers have crossed by this route, at all seasons and both to and fro: that what single-handed citizens and the women of our country have done, the Government can also do.

Prior to 1492, the people of Europe were occupied for centuries in discussing the existence of America and the possibility of reaching it. These doubts and discussions were categorically resolved forever by the voyage of Columbus. All that is necessary for suc-

cess is a just liberality by Congress towards the enterprise now inaugurated by this company under a charter from our State.

The committee therefore recommend that this company shall ask and receive from Congress the right of way to construct a road from Missouri to the Pacific; temporary at first, but in good time, substantial and permanent, in all particulars. That to assist the construction of such a road, a grant be given to this Company by Congress of not less than alternate sections of land on each side of the line from Missouri to the Pacific. That a sufficient military or civic police be provided to give safety to the mails and passengers *in transitu* and to the permanent stations and working parties on the road. That finally Congress shall aid and secure an early success, by contracting for the carrying to and fro of the mails for *ten years*, at a compensation not exceeding $300 per mile per annum.

Your committee estimate that such a road, having a hard and smooth track of thirty feet, with bridges and all other structures to insure its excellence and perpetuity, can be constructed from a belt of land three miles in width across the wilderness. The benefits which would accrue by the planting of settlements through the wilderness, by establishing fast, frequent and regular mails, by telegraphic communication for the transmission of news across the continent, even that coming from Asia, in a few hours, are immense witnesses and advocates to excite the just liberality of Congress.

Your committee will tersely recapitulate a few homespun facts demonstrative of the conveniences which this road and these mails will be to the whole volume of the human family. In Europe and around the shores of the Atlantic is a population of 250,000,000, of which, Paris, in France, may be assumed to be the centre. In Oriental Asia and around the Pacific is a population of 650,000,000, of which Pekin, in China, may be a similar centre. From Paris to Pekin, by this route, the distance is exactly *ten thousand* geographical miles. This route lies through the temperate zone of the northern hemisphere, where the continents most nearly approach, where nine tenths of the human race dwell, and where the population of the world may be said to be grouped together. It is the AXIS of population, production, consumption, commerce and travel of all mankind. Once opened, the attention of mankind must concentrate itself here, as superceeding all other routes, present or prospective, in the elements of time, economy and convenience. Casting up the advances made during the last ten years, your committee are led, as by a mathematical sequence, to expect that, in another decade, the distances will be traveled by this route, from Europe to New York in *seven* days; across America in *five* days; to Asia in *eight* days. So do we advance to touch the goal, sought during so many centuries, to close the zodiac of the globe and blend in bonds of fraternity, all the seas and all the nations!

Can Congress longer withhold from us the slender gifts, justly due, by which we guarantee to accomplish or approach at least such grand results? Your committee have thought it a duty to cite attention to the enormous outlays of federal monies for the protection and encouragement of commerce. They have enumerated some of the specific objects most prominent among these expenditures. They are found all upon the Atlantic seaboard and the Atlantic ocean. Whilst these have been constant and constantly accumulating since the foundation of the government, provision for the interior has been altogether refused or neglected. More than this, the interior has been oppressed by taxation drawn to and expended upon the seaboard to swell this injustice.

Your committee are not in haste to condemn indiscriminately what has stimulated the wealth and greatness of the country. They mean to place in bold relief, the striking contrast presented in assigning the federal monies, and to condemn these flagrant partialities — to point to the hour which has arrived, and demand self-action from the people of Missouri, of the interior, of the new seaboard, to reinstate their own interests and instil equity into the practice of the Government.

JOHN O'FALLON, JAS. H. LUCAS, WILLIAM GILPIN, SAML. B CHURCHILL, JOHN HARTNETT, HENRY S. TURNER.

ARTICLE V.

(From the Geological Survey of Missouri.)

Economical Geology of Marion County.*

BUILDING MATERIALS.—*Limestones.* The Archimedes and the Encrinital Limestones and the Cooper Marble, all furnish building materials, at once cheap, durable and beautiful. The quarries at Hannibal, Palmyra, Philadelphia and Sharpsburgh, and the beds of those Formations exposed in all the bluffs of the county, afford ample evidence of a vast quantity of excellent limestones for building purposes. The Calaboose at Hannibal presents a fine specimen of the Encrinital Limestone.

* It was among the leading objects of our Journal, at its commencement, to make known the agricultural resources and mineral wealth of Missouri; and, while we continued to urge the importance of a geological survey, we sought and collected information from every reliable source whence it could be obtained. More than eight years have elapsed since we commenced the agitation of this subject, and we are strongly impressed with the opinion that had the Legislature of 1848–9—before which the measure was first introduced—authorized a geological survey, with a sufficient appropriation to prosecute it with efficiency, it would have saved millions of dollars to the State. We desired that this work should precede the adoption of a system of public improvement, that the facts

Marble.—Some beds of the Encrinital Limestone in the bluffs of the Mississippi, between the Fabius and McFarlin's Branch, and in several other places in the county, would furnish an abundance of durable white crystalline marble. The Cooper Marble, F. *m*, on North and South Rivers, and See's Creek, presents many beds of a fine blue marble, bespangled with numerous pellucid crystalline particles of calcareous spar. This rock receives a fine polish, and is well adapted to ornamental marble work, where dark varieties are appropriate. The Lower beds of the Lithographic Limestone, exposed near the water at Hannibal, are, also, well adapted to the same varieties of work, though the color is not so dark, it being a bluish drab. These marbles are admirably fitted for use in tesselated pavements. Squares of the latter varieties, alternating with the white, would present a fine effect.

Freestone.—The sandstone, F. *f*, contains, in many places, beds of excellent freestone for building purposes; as in the quarry near Mr. Pond's, and in the bluffs of North River and the Fabius. The micaceous Sandstone, F. *e*, is sometimes used, but it disintegrates too rapidly to be durable. The upper strata of the Vermicular Sandstone, are used for the Eastern abutment of the bridge over the South Fork of North River, near the mouth of See's Creek, and for a culvert of the Railroad, near Sec. 124. It is not sufficiently firm for durable masonry.

Bricks.—The clays of the Bluff Formation furnish an abundance of excellent material for bricks. The sand and clay are often mixed in the requisite proportions for use, while there is enough of the oxide of iron to give the burnt brick a fine red color. (See page 72.) The red clay in the Railroad cut at Palmyra, with a small mixture of clean sand, would make superior, hard, durable and deep red brick. In short, materials for this use, are abundant in all parts of the county.

Cements and Mortars.—The Limestones, Fs. *h*, *i*, *l*, and *m*, all contain strata which will burn into lime of the very best quality. The Boulder Deposit and the Alluvium of the river bottoms, abound in good sands for mortars and cements.

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which it was calculated to develop should have their proper influence in determining the location of our railroads, and also upon the credit of the State abroad.

But, notwithstanding the commencement of this work was delayed beyond the propitious point of time, in respect to our public improvements, yet enough has been done to produce a salutory influence upon the credit of our public securities. In view of what has been made known by the survey as far as it has progressed, we are persuaded that the most extravagant opinions which have been entertained of the agricultural and mineral wealth of Missouri will be more than realized. As an instance, Marion county has not ranked, as we believe, among the first agricultural counties of the State; but the enlightened agriculturist will readily perceive that it contains elements of fertility in a degree not excelled perhaps by any other part of the globe of equal extent.

We take this occasion to remark that the State Geologist, Professor Swallow, and his Assistants, are entitled to the thanks of the people of Missouri, for the industry and professional science manifested in their labors.—Sen. Editor.

Hydraulic Cement.—The upper part of the Lithographic Limestone and the middle portions of the Vermicular Sandstones and Shales, afford some Hydraulic Limestones, but the quality of the cements formed from them has not yet been examined. We shall test their value by experiment. (See pp. 167 and 168.)

ROAD MATERIALS.—Materials of the very best quality for roads are found in the greatest abundance in the Drift and the rivers and creeks, in various parts of the county. The gravel of the Drift, when well selected, cannot be surpassed for roads; as roads made of it, are smoother and many times more durable than those made of plank. The Gravel Road, leading westward from Hannibal, is a good illustration of the fitness of this material for such purposes. And yet the best of it was not used on this road. Long experience in England, has proved the chert pebbles to be the best material ever used there for highways.

USEFUL MINERALS.—*Silicious Marl.* This marl is at once the most abundant and most valuable of all the minerals of Marion. It abounds in every section and quarter section of the county, save those in the river bottoms, where its presence is not needed to make a good soil. It varies in depth from two to thirty feet, and lies directly under the soil, into which it enters as its largest ingredient. Almost all of the subsoils are made up of it, and subsoil plowing will give the crops the advantages of its fertilizing properties. This marl forms almost the entire mass of the Bluff or Loess, as described above. Its quantity in the county is immense, and should become an inexhaustible bank, upon which the farmer may draw for ages to come. For the agricultural value of this marl, see Economical Geology, Chapter I.

Pipe-Clay.—A most excellent quality of this useful mineral is abundant in the county. It is found on the lands of Mr. James Maddox and Mr. White, south of North River; on Mrs. Brown's and Mr. Pond's, east of Cedar Creek; at the coal-bank of Hays & Muldrow, in Sec. 20, of Town. 57, R. 7, and Sec. 10, of Town 58, R. 7, south of Sharpsburg, and north of Judge Gore's, where it was obtained for the pottery of Oldham & Davis. It exists in many other places, sufficiently abundant for all the purposes to which such clays are applied. We have a fine specimen from Mr. Enoch Griffith. This clay is much used for white-washing; and some think it preferable to lime, for that purpose. It is as white, more tenacious, and does not soil so easily.

Fire-Clay.—No. 5, S. III. is, in many places a good fire-clay, and the Formations *p* and k furnish inexhaustible beds of this material. The two beds mentioned are each from thirty to fifty feet thick, and they crop out in the bluffs of North River, Fabius, South River, and the Mississippi. The quantity is unlimited, but experiments and analyses, which will be made, alone can prove its quality. Should it make good fire-bricks, the manufacturing of them would make these beds a source of great wealth.

Gritstone.—Mr. A. Pond has a fine grindstone of coarse sharp grit, made from a sandstone, F. *f.* on his farm.

Marble, *Hydraulic Limestone*, *Limestone*, and *Sandstone*, are mentioned under the head of building materials.

Lithographic Limestone.—The lower beds of F. *l*, present every appearance of a fine lithographic stone. The jointed structure will render it somewhat difficult to obtain slabs for the larger lithographs, but any quantity suitable for smaller sizes can be procured. See. 2, facing page 63, was engraved on this stone.

Coal.—This useful mineral, so abundant in some of the neighboring counties, was found in small quantities only in this; as the Coal Measures exist merely as outliers of limited extent. The largest area covered by them, is in the south-western part of the county, where the micaceous sandstone is so abundant. Whether any coal exists there, is a problem yet to be solved, though the probabilities are, that it will be found under the sandstone; for in several places, as below the mouth of the La Mine, in Cooper county, three coal-beds exist under this sandstone. But, in several places in the vicinity of Sharpsburg we saw this sandstone resting directly upon the Encrinital Limestone, with no intervening strata of any description whatever. But two beds of coal have been discovered in this county. The one is seen at Keller's, and at Hays & Muldrow's bed; the other, at Mr. Pinkston's pit, in Town. 57, R. 8, Sec. 29. These coal strata, and, doubtless, the coal also, crop out on the land of Capt Carson,* Town. 58, R. 7, Sec. 1. The former bed is variable in thickness, according to the testimony of those who saw the mines opened; the pits are now filled up. Its depth may be set down at eighteen inches, near Mr. Keller's, and at one foot, north of Houston. The quality of the specimens seen, was good; yet, the limited extent of these beds, renders it probable that they will be worked for home demand only. The latter bed is a narrow valley, excavated in the Encrinital Limestone, whose mural bluffs must have been the shores of the estuary in which this deposit of coal was formed. It contains so much sulphuret of iron as to render it valueless for all ordinary purposes. A considerable sum of money has been spent in sinking shafts for coal in the shales at Hannibal, and in the bluffs, a few miles south of that town; but without the least possibility of success. No workable beds of this mineral have been found in, or below the Archimedes and the Encrinital Limestones, both of which are above the shales just mentioned. These shales are so similar to those of the Coal Measures, it is not surprising that one unacquainted with Geology, should mistake them for the same, and deem them good indications of coal. But a Geologist could at once detect their difference, and show the impossibility of finding coal so low in the series. No coal of any extent will be found in Marion county, save in or near the localities indicated as occupied by the Coal Measures; and all money spent exploring these lower shales will be thrown away.

Carbonate of Lime exists in great abundance in this county; as *Limestones* fit for common building purposes, *Marble* for ornamental work, *Lithographic Stone*, *Hydraulic Limestone* and those suitable for mortars, besides the numerous varieties of Calcareous Spar, so beautiful in structure and appearance. These spars are found in cavities of all the Limestones mentioned above, but more particularly in the

* Since this Report was written, Capt. Carson has discovered the coal on his land in the south-east quarter of Sec. 1. The bed is one foot thick.

Lithographic and Archimedes beds. They are most abundant in the numerous Geodes of the latter, where we found the varieties mentioned in Chapter I., under the head of Archimedes Limestone.

ORES.—Iron is abundantly disseminated through the rocks of Marion, but it nowhere furnishes a sufficient quantity of good ores to justify manufacturing operations.

Oxides of Iron constitute a large part of the coloring matter in the brown sandstones, limestones, shales and clays. In many places the boulder and bluff deposits are so charged with it as to present the brilliant colors of the red and yellow ochres.

Iron Pyrites is quite common in the Shales of the Coal Measures and the Vermicular Sandstone and Shales. When exposed to the air it readily decomposes, and the sulphur unites with oxygen, forming sulphuric acid, which re-unites with the iron and forms sulphate of iron, or with the alumina and potassa of the Shales, and forms the Alum so often present in the water percolating through those rocks.

Sulphuret of Iron is, also, found in the coal in greater or less abundance. It produces those sulphurous fumes, so annoying and injurious to those who use such coal either in the house or work-shop. Its sulphur, also, unites with the iron and steel worked with the coal, and renders them brittle and worthless for many purposes.

The Limestones, Fs. *h* and *i*, contain more or less of this mineral in small particles and crystals, which renders some beds unfit for outer walls where beauty is an object; for a very small fragment will, on exposure to the air or water, produce an iron stain, several feet in length. The Lithographic Limestone often contains brilliant cubic crystals of it. In the blue shales of the Hamilton Group, it is found in cylindrical or globular masses set with myriads of minute crystals, whose splendent tarnished facets present all the brilliant hues of the dove-colored changeable silks. These worthless masses are often mistaken for valuable ores.

Zinc.—The *Sulphuret of Zinc*, *Blende*, or the *Black-Jack* of miners, exists in small quantities in the Archimedes Limestone, at Sec. 106, and in the Lithographic Limestone, Sec. 2.

Lead.—Small portions only, of *Galena* or the sulphuret, were found in the Encrinital Limestone, and in the geodes of the Archimedes Limestone.

Manganese.—The oxide of manganese forms most perfect dendritic markings on the conchoidal fractures of the Lithographic Limestone. These markings are as delicate as frost work, and far more beautiful than the most perfect productions of the Lithographic art.

Quartz, in the form of a Saccharoidal Sandstone, fit for glass manufacture, is not uncommon in the Ferruginous Sandstone. Granular, smoky, milky and limpid quartzose pebbles, are found in the Drift.

Chalcedony.—Many of the geodes above mentioned, have internal coatings of this beautiful mineral.

Agates of a very fine quality are found encrusting the drusy cavities of the silicious geodes so common in the Archimedes Limestone.

Jasper and *Touchstone* exist in the Drift.

SOILS.—A good soil is the most useful and enduring wealth of a country. We elsewhere stated, without the fear of contradiction, that

Missouri possesses one of the best soils upon the Continent, for the cultivation of our great staples, *Hemp*, *Corn*, *Wheat* and *Tobacco*.

There are five distinct varieties of soil in Marion county:

1st. The *Elm Land*, so called from the heavy growth of the American Elm, *Ulmus Americana*, which it produces, is scarcely inferior to the very best in the State. It is based upon a deep, light and rich deposit of the silicious marls of the Bluff Formation, which has a large admixture of vegetable mould, from the rank vegetation it has sustained for many a bygone age. It produces the finest crops of Hemp and Corn; and, after the superabundance of vegetable matter has been exhausted by several successive crops, it brings most excellent wheat. The country occupied by this soil presents a surface gently rolling, well watered, well drained, and heavily timbered. The principal growth is American Elm,* Hack-Berry, Red Mulberry, Honey Locust, Black Walnut, Black Oak, Wild Cherry, Blue Ash, Red Bud, and Papaw. These lands are marked on the map by dotted lines.

2d. The *Hickory* and the best *Prairie Lands*† occupy the next grade, and, in fact, are often but little inferior to the *Elm Lands* just described. This soil, also, rests upon the same marl deposit of the Bluff, contains less vegetable matter, and is more argillaceous and less porous. It produces good wheat, corn, tobacco, &c. The surface of these Prairies is gently rolling; but the Hickory Lands are more broken, and the slopes more abrupt. The timber most abundant is Common, Shellbark, Thick Shellbark and Pignut Hickories; White, Red, Black and Scarlet Oaks; White and Black Walnuts; Sugar Tree; and White and Blue Ashes; Sassafras;‡ Papaw; Hack-Berry; Red and Black Haws; and Summer, Fox and Frost Grapes.

3d. The *White Oak Lands* and the poorer Prairies possess the least productive soil in the county. It is, also, based upon the Bluff marls; but it is more argillaceous and silicious, contains less vegetable matter than either of the soils above mentioned, and appears to have lost the finer and lighter portions, by the constant action of rains. In most cases, the subsoil is better than the surface. It occupies the ridge in the north-western part of the county, and is but sparingly timbered with White Oak (*Quercus alba*), Laurel Oak‖ (*Quercus imbricaria*, Mx.), Black-Jack Oak (*Quercus ferruginea*), Crab Apple (*Malus coronaria*), Black Hickory (*Juglans microcarpa*), and the dwarf variety of Post Oak (*Quercus obtusiloba*).

4th. Under the bluffs, where the shales of the Vermicular Sandstone and Shales and of the Hamilton Group, are exposed, we find

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* The scientific names of trees are given in Appendix C.

† This is the same as the 2d grade of soil from the Bluff, mentioned p. 139.

‡ On the Mississippi bluffs, between the North and South Fabius, the Sassafras is very abundant and large, often one and a half or two feet in diameter. It is much used for rails in that region.

‖ This species is called Water Oak in Marion county.

a wet, heavy, clayey soil, rich in vegetable matter. It sustains a growth of rank weeds and heavy timber. Thorough draining and subsoiling alone, can fit this soil for common agricultural purposes; but when once reclaimed, it will be very permanent and productive for oats, grasses and all kindred crops. The timber is a growth of Bur, Red, Swamp White, Pin and Laurel Oaks; Honey Locust; Box-Elder; Buckeye; Sugar Tree; White Maple; American Elm; Hack Berry; Thick Shellbark Hickory; Linden; Red Birch; Black Walnut, and Papaw.

5th. The *Alluvial Bottoms* and *Bottom Prairies* along the Mississippi, present a rich, loose vegetable soil, well adapted to hemp and corn; only a small portion of them is sufficiently safe from inundations to warrant cultivation at the present prices of land. The timber of the alluvial bottoms is mentioned page 139.

6th. The *Swamp Land* of the Mississippi Bottom is more or less covered with water, and sustains a rank growth of vegetation, which, together with the fine sediment of the waters, adds yearly to the vast amount of fertilizing matter in the soil. When these lands are eventually reclaimed, they will be very productive and well nigh inexhaustible.

So universal is the Bluff Deposit in this county, that the older rocks have but little effect upon the soils, save in two instances, where these rocks readily decompose. The Micaceous Sandstone of S. III. renders the soil sandy in the south-western part of the county, where it is so well developed; and the shales of S. IV. make the soils clayey and wet, as described in the 4th variety above. This effect of these shales, is obvious wherever they crop out in the bluffs of the South, North and the Mississippi rivers, and of See's, Lick and Cedar Creeks. The numerous springs, which break out at the top of these shales, overflow their impervious soils and render them extremely wet.

This description of the soils of Marion county must be imperfect from the nature of the case. In order to have a full knowledge of a soil and its agricultural capacities, we need an analysis of its ingredients, the rocks upon which it rests, the herbs and trees it supports, the topography of the country and meteorological tables, giving the amount of rain, the dew point and the temperature of the climate.

We collected soils, but the analyses have not yet been made; we made imperfect collections of the plants and trees, and such meteorological observations as our stay of four weeks would permit; but no time has yet been found for arranging the plants and observations for use. I have, however, appended to each variety of soil a list of some of the most important and abundant trees growing upon it.

When these analyses are completed and full catalogues of the plants made out, a more detailed account of the soils will be given, together with the crops and modes of culture best adapted to each.

One thing, at least, is very certain, that nothing could so much benefit the soils of Marion, and particularly the 2d, 3d and 4th varieties, as subsoiling with a plow, that would stir the soil to the depth of eighteen or twenty inches. Had this been done, not even the severe drought of the present season would have burned the crops. Several fields in Boone county, where this was tried, prove this position beyond a cavil. (See p. 151.)

A glance at the map of this county will show how admirably the timber and prairie lands are arranged to meet the wants of an agricultural community. There is scarcely a township without its quantum of each, and that so arranged that every farm may have its due proportion.

Springs.—*Fresh-water Springs* rise, bold and limpid from the limestones in all parts of the county. But they are particularly abundant along the line of separation between the Encrinital Limestone and Vermicular Sandstone and Shales. The strata of the latter are impervious to the waters, which percolate through the superincumbent limestones; and they are forced along the dividing plane until they find an exit, where that plane reaches the surface. A large portion of the springs in the bluffs of the Fabius, South and North Rivers, break out along the line of separation between these rocks A small creek comes rushing out of the eastern bluff of South River, just above the Railroad crossing, which, in all probability, has the same origin as the springs above mentioned.

Salt Spring.—I saw but one in the county. It is called North River Lick; and is situated in Town. 58, R. 7, Sec. 25. The water is said to be a strong brine; but we have not yet analyzed it, and cannot speak positively of its qualities.

Chalybeate Springs.—A chalybeate spring rises in the bed of the creek west of Sharpsburg; but its waters were so mingled with those of the creek, and its passage so choked up, that I could not judge of its medicinal properties. The large amount of iron deposited, indicates that it is strongly impregnated with that metal in the form of a Carbonate. On the land of Mr. Gelaspie, a spring strongly impregnated with the sulphate of iron, rises from the chert beds above the Encrinital Limestone. Four or five yards below, a fresh spring breaks out of the limestone itself. The ferruginous clay, interstratified with the chert, is, probably, the source of the iron in the former.

Sulphur Springs.—A bold sulphur spring rises from the Blue Shales of S. IV. on Lick Creek, east of Mrs. Shannon's. This, so far as we could judge, from the gas, the deposits, the taste and the testimony of those who have used it, is a most excellent sulphur water. A quantity was collected for analysis, which will, doubtless, prove it to be a valuable medicinal water, and worthy of the reputation it sustains. It is located in a beautiful valley, and could easily be made a desirable watering place.

STREAMS.—But few counties are so well watered as Marion. A glance at the map will show how admirably every portion of it is intersected by rivers, creeks and branches. The North and South Fabius, the North and South Rivers, the Troublesome, the Grassy, See's and Lick Creeks, besides numerous Branches, intersect every township in the county. Water-power and mill sites are abundant. These streams abound in fish, particularly the sloughs and bayous, as Bay de Charles, in the Mississippi Bottom, where large quantities are caught for market.

Thus much, we have thought it best to say of Marion county, without waiting for more definite conclusions respecting the soils, waters, limes and clays, to be derived from the labors of the chemist.

Now, the question naturally arises, "What good will result from this Survey?" The amount of good depends, in the main, upon those who own the soils and minerals of the county. Will the farmers develop the full wealth of their rich soils by working some twenty inches, instead of the five or six heretofore loosened? I have shown that the subsoil in the White Oak and prairie lands is as good, or better than the surface, while that of the Hickory and the Elm lands, is almost as good; and, in short, that subsoiling would benefit every acre cultivated. If the farmer still chooses to occupy but five inches of his soil, and let every drought burn up his crops, it is not our fault; we have pointed out a more perfect way. If deep plowing be adopted, the increased profits in farming in this county alone, would more than pay the annual expenses of the Survey.

But we have pointed out extensive beds of three varieties of *Marble*, suited to ornamental architecture, one bed of *good Lithographic Limestone*, two vast beds of *Fire-Clays*, numerous beds of first-rate *Pipe-Clay*, besides *Building* and *Road Materials* without limit. These are better sources of national wealth than Gold or Silver Mines. But few men would prefer, when dying, to leave their sons on a golden placer in California, rather than upon one of the rich farms of Marion, with its *inexhaustible* soil and beds of *Marl*, *Marble*, *Pipe-Clay*, *Fire-Clay* and *Lithographic Limestone*, all imperishable sources of wealth.

Again, we have proved that no coal can be found in the limestones and shales of the central and south-eastern parts of the county. This may prevent the expenditure of thousands in searching for that mineral. Had the fact been known a few years sooner, it would have saved more than the survey of the county cost.

We have, also, made an accurate topographical map of the county, with all the streams, prairies, Elm Lands, bluffs and towns laid down, together with the Geology. This map must be of great service to all; and when similar maps are completed for all the counties, much will have been added to the geographical knowledge of the State.

The bluffs along the streams are most beautiful when clothed with the rich foliage, and numerous flowers, which adorn them. In the months of April, May and June, these bluffs are beautified by a gaudy and delicate Flora. The snowy *Spirea opulifolia*, *Mespilus arborea*, Anemone, Violets, Geraniums, Hepaticas, Sanguinarias, purple and white Anomias, the gaudy purple and yellow Rudbeckias, the graceful Canadian Aquilegia, the magnificent pink, purple and orange Asclepias, the fairy-like Sensitive Brier, and numerous others of the lovely sisterhood, profusely adorn the bluffs and broken grounds along the streams.

The Flora of the prairies is still more gaudy and magnificent. Baptisias, Coreopses, Larkspurs, Lilies and numerous other showy flowers, gem the green carpet of those vast meadows.

HOW TEA IS ADULTERATED.

A London paper, giving an account of the manner in which tea is adulterated after its importation, furnishes the following information of the manner in which the trade is carried on in China :—

The dishonesty of adulterating tea is not, however, confined to this country. It often undergoes a strange process of transmutation before it reaches the hands of the English dealer. The Chinese are not at all behind us in practices of dishonesty, and the genuine and fraudulent tea trades flourish in China with almost equal vigor. The people of that country have long enjoyed an unenviable pre-eminence for their success in ingenious deceptions. Recent travellers have confirmed the well-known testimony of Sir Francis Davis, in reference to the extensive exportation of adulterated teas by the natives. He speaks of a regular manufactory for the production of spurious green teas, which, with the most daring effrontry, has been erected exactly opposite the European factories at Canton, on the other side of the river. He naturally found some difficulty in procuring admission within its precincts, but his object was at length effected through the influence of a Hong Kong merchant, and the scene is thus described :—"In the first place, large quantities of black tea, which had been damaged by the floods of the previous autumn, were seen drying in baskets, placed over hot pans of charcoal. The dried leaves were then transferred, in portions of a few pound each, to a number of cast-iron pans, which are placed over furnaces. They were next stirred rapidly round with the hand by a workman, who had previously added a small quantity of turmeric, which imparted a yellowish tinge to the mixture. In order to convert this into a green hue, the color so much derired, some lumps of Prussian blue and gypsum were added in such proportions as reduced the dark blue to a light shade, of which a small teaspoonfull was added to the yellowish leaves. These were then stirred before the fire until the tea had taken the 'fine bloom' color of hyson, with very much the same scent. The transformed leaves were then picked, sifted, chopped small, and supplied to the merchants as excellent young hyson."—*Merchants' Magazine.*

DEPARTMENT OF COMMERCE.

COMMERCE OF ST. LOUIS.

Compiled from the Annual Review of the Commerce of St. Louis, for the year 1855. From the Mo. Republican.

Table of produce and merchandize received at St. Louis from the Missouri, Mississippi, Illinois and Ohio rivers, during the year 1855. In this statement, the Upper and Lower Mississippi are embraced under one head, as are also the Ohio and its tributaries.

Articles.	Mo. R.	Mississ	Illinois.	Ohio.	Total.
Ale, bbls and cks	77	1,026	28	11,464	12,595
Axles		34		10,077	10,111
Barley, sacks	808	23,675	31,733	8,562	64,868
Beans, sacks	343	8,827	1,111	4,314	14,595
Do. bbls.	34	664	205	15	918
Brooms, doz		6,518	11,273	4,622	22,413
Bran, &c., sacks	797	50,996	3,928	242	55,963
Bagging, rolls				121	121
Beef, bbls	3.6	9,787	8,614		18,517
Do tierces		2,690	794		3,741
Boots and Shoes, cases		8,972	10,444	19,864	39,280
Boiler heads			345		345
Corn, sacks	14,487	336,727	956,351	253	1,307,818
Cheese, boxes	106	252		27,274	27,632
Cotton, bales		1,429		91	1,520
Coop rage, pieces	31,468	32,194	10,590	47,754	125,006
Coffee, sacks		137,547		2,072	139,619
Cement, bbls		5,120	6,227	12,795	24,542
Candles, boxes	119	820		16,290	17,229
Castings, pieces		693	114	102 471	103,278
Do tons				296	296
Cordage, packages	3,345			516	3,861
Chairs, doz		478	308	11,037	11,815
Flour, bbls	6,120	273,378	51,188	682	331,368
Feathers, sacks	1,033	656	45	739	2,473
Furniture, packages and pieces		8,904		34,062	42,066
Grease, packages	41	1,550	1,142		2,743
Glass, boxes		167		43,285	43,454
Glassware, packages		4,217		60,864	65,081
Gunnies, bales		7,634	156	570	8 340
Do. bundles		9,599	941	2,168	12,314
Gaspipe, bdls				1,254	1,254
Hides, pieces	38,567	69,151	9,964	825	118,807
Hay, bales		9,437	3,593	1,757	24,787
Hops, bales		558	61	1,213	1,839
Hemp, bales	89,675	3.511			93,186
Hats, boxes		446	181	2,019	2,646
Hardware, packages		6,989	174	24,778	31,941
Iron, bundles		4,994	184	144,614	149,742
Do. pieces		83	129	109 075	109.287
Do. bars		2,077		208,730	210,807
Do. bars, tons				553	553
Do. packages				10.045	10,045
Do. pigs, tons		4,240	23	13,898	18,161
Do. boiler, pieces		474		19,618	19,892
Do. R. R. bars		117,877	800	2,499	121,176
Do. R. R., tons		3,072		1,200	4,272
Lard, tierces	1,068	15,703	12,562		29,353

Produce and Merchandize received at St. Louis, &c.

Articles.	Mo. R.	Miss.	Illinois.	Ohio.	Total.
Lard, bbls	2,294	3,374	17,510		53,558
Do. kegs	1,451	5,546	6,250		13,247
Do. packages	193	3,174	2,927		6,299
Leather, rolls	41	2,299	991	19,570	22,901
Lead, pigs	3,432	312,245			315,566
Lime, bbls		2,413	500		2,913
Lightning Rods, bundles				438	438
Meats, bacon, casks,hhds&tierces	2,502	13,273	6,935	57	22,767
Do. packages	158	3	37		198
Do. boxes	52	333	107		492
Do. sacks	424	40	168		632
Do. pounds	14,000				14,000
Do. pieces	1,347	1,114	10,301		12,762
Do. bulk, pieces	2,117	461,714	495,804		959,635
Do. pickled, casks		119			119
Do. bulk, tuns		10			10
Do. bacon, bbls		317			317
Malt, sacks		162	560	3,082	3,804
Molasses, bbls		52,038		8	52,046
Do. kegs		1,792			1,792
Nails, kegs		14,635	200	152,425	167,260
Oats, sacks	1,409	557,932	389,705	991	950,037
Onions, sacks	9	18,748	229	98	19,084
Do. bbls		223	86	390	696
Pork, bbls	163	29,707	51,337	126	81,328
Do hhds and casks	9	678	378		1,065
Do. bbls., casks and tierces		861	7,860		8,721
Pork and Lard, bbls	27	356	172		555
Do. bbls. and tierces	380	367	2,296		3,043
Do. casks and hhds			70		70
Pork and Beef, bbls		286	694		980
Potatoes, sacks	41	108,620	60,795	1,260	170,716
Do. bbls		928	176	234	1,338
Paper, bundles and packages		1,676		172,684	174,340
Plough wings				5,951	5,951
Ploughs	13	638	2,240	216	3,107
Rope, coils	37,131	1,811			38,942
Rags, bags	918	2,833	2805	144	6,700
Do. tons	9		3½		12½
Rye, sacks	532	28,177	13,877	2,513	45,099
Rice, tierces		4,351		103	4,454
Rosin and Pitch, bbls		15,411		71	15,482
Seed, sacks	2,080	10,104	3,190	1,103	16,477
Seeds, bbls	119	636	380	1,199	2,334
Starch, boxes			89	3,644	3,733
Soap, boxes		856		7,851	8,707
Sugar, hhds		58,206		9	58,215
Do. bbls		5,708		150	5,858
Do. boxes		17,242			17,242
Salt, sacks		403,390		4,462	407,852
Do. bbls		50		61,735	61,785
Stoves	31	106	68	15,296	15,503
Steel, bars and slabs		468		11,829	12,297
Do. packages		1,235		15,409	16,644
Do. springs		10		8,232	8,242
Tallow, packages	470	732	799	152	2,153
Tin, boxes		15,246		91	15,337
Tobacco, hhds	5,327	1,325	33	106	6,791
Do. boxes	1,667	3,692	232	2,936	8,527
Do. packages	11	1,248	34	2,862	4,155

Produce and Merchandize received at St. Louis, &c.

Articles.	Mo. R.	Miss.	Illinois.	Ohio.	Total.
Twine, bales	32	5		101	133
Tar, bbls.		8,918		825	9,743
Do. kegs		1,068		150	1,218
Do. stands		1,833			1,833
Do. cans		178		40	213
Turpentine, bbls		3,483			3,483
Trunks		454		8,463	8,917
Wheat, sacks	129,920	878,997	698,336	62,515	1,769,768
Wheat, bbls	498	1,956	13,162	515	16,121
Whiskey, "	52	27,676	32,874	7,886	68,488
Wool, bags	564	339	90	2	995
Wooden Ware, buckets, nests		2,935		20,436	23,371
Wooden Pails, doz		2,091		780	2,799
Wooden Tubs nests		2,403		10,587	12,990
Wooden washboards				10,846	10,846
Waggon boxes				4,876	4,876

Receipts of Produce by the Pacific Railroad for the year 1855.

Bacon and Pork, lbs	139,896	Lard, lbs	41,495
Barley, bus	4,564	Lead, tons	361¼
Buckwheat, "	41	Lumber, sawed, tons	638
Cattle, head	533	Marketing, tons	468½
Copper, lbs	23,113	Mules	65
Corn, bus	4,052	Oats, bus	5,326
Cornmeal, lbs	10,069	Rye, "	67½
Flour, bbls	293	Tallow, lbs	26,189
Hides, lbs	150,347	Tobacco, hhds	264
Hogs, live	13,970	Wheat, bus	78,290
Horses	178	Whiskey, bbls	358½
Iron, pig, tons	629½	Wood, cords	10,455½
Iron, blooms	167½	Wool, lbs	510

Leading Articles of Produce received by the Ohio and Mississippi Railroad in 1855.

Wheat, bushels	42,394	Tobacco, bales	3
Flour, bbls	8,632	Hogs, car loads	100
Flour, sacks	2,363	Hogs, head	81
Corn, bushels	2,695	Chickens, coops	186
Oats, "	12,904	Eggs, packages	147
Rye, "	1,308	Horses	20
Barley, "	392	Cattle, car loads	14
Shorts, sacks	2,077	Hides, bundles	576
Flaxseed, sacks	910	Butter, packages	802
Flaxseed, bbls	20	Fruit, bbls	702
Castor beans, sacks	899	Fruit, sacks	1,263
White beans, sacks	233	Tallow, packages	124
Whiskey, bbls	55	Merchandize, packages	2,636
Tobacco, hhds	8		

This road was opened to Vincennes on the 4th July, 1855, but the business was suspended for a considerable time, and, consequently, but little business was done upon it before the winter set in. We give the foregoing statement of leading articles to show the character rather than the amount of business done on the road.

The Wheat Trade at St. Louis in 1855.

The extraordinary prices of wheat which prevailed throughout the United States, in 1855, constitute an interesting era in the agricultural history of this country, and are worthy of being recorded for future reference. The following review is copied from the "Annual Review of the Commerce of St. Louis for the year 1855," published at the Missouri Republican office.

At the close of December, 1854, the stock left over, including flour, was estimated at 160,000 bushels.

Early in January, with good receipts, common to prime fall red commanded 120 to 138c., but buyers stood off. By the middle of the month, a financial stringency occurred, which preceptibly restricted operations. Choice white, on the 17th sold at 137½ to 140 cents, red fall at 110 to 135c., spring 102 to 110c. On the 20th, city manufacturers, unable to dispose of flour, asked time on their wheat purchases After the lapse of a week, prime qualities came into request, with a good outside demand, and red would have brought 135 to 140c., white 145 to 147c., but none was on the market. Fall red sold at 115 to 130., fair to good, spring 107½ to 125c. At the close of the month, the stock was light, and prime red held at 150c. Prices tended upward.

February opened with a very reduced stock. Prices for spring 125 to 127; fall red 110 to 150c., inferior to prime, prime and choice white 160 to 175c., the highest prices ever before reached. The river was now closed, preventing even a communication with Alton, and receipts became extremely light. City millers stood in need of good qualities. On the 14th, a sale of good red and prime white, to arrive, was made at 165c. all round, and 4,000 bushels same qualities, also to arrive, at 167½c. Some doubt was expressed in regard to the maintainance of these prices, and buyers for a few days touched with cautiousness. On the 21st, fair to prime fall commanded 145 to 170, Zimmermann 172½ to 175, and large sales were made, on future delivery. At the close, spring sold at 160, red fall 170 to 175, white 180 to 185, Zimmerman 195c.

Advanced prices, notwithstanding the formidable obstructions to shipments, brought forward better supplies. By reference to the table of receipts, it will be observed that receipts to March were almost exclusively from the Mississippi. On the 7th, the Illinois and Missouri opened, and supplies became liberal. On the 2d, spring sold at 150, red fall 160 to 185c., choice white 200., the highest prices attained. With a good demand from the Ohio, prices gradually declined, and on the 10th, spring brought 135 to 140,

red fall 155 to 175, prime white 180 to 185c. Receipts continued to increase, but prices were well sustained, prime white selling at 180 to 190c. The supposition was now generally entertained that short supplies would result, and this with liberal purchases for points abroad, advanced figures still further, and on the 21st, spring brought 135 to 150, red fall 158 to 185, Zimmerman 182, and common white 175 to 180c. By the 24th, with reduced supplies and an increased outside demand, sellers obtained almost any price asked, and spring brought 160, fall red 165 to 193, choice red and white 201c. Prices continued to improve to the end of the month, when spring was quoted at 165 to 182, red fall 180 to 230, and white 205 to 232½c.

At the commencement of April, with increased receipts, spring was quoted at 167½ to 180, fall red and white 185 to 235. By the close of the first week a slight decline was effected, with a good demand from the Ohio, and mixed sold at 155 to 160, fall red 190 to 225, white 230. The downward tendency was arrested by the 11th, when spring was quoted 140 to 155, mixed 170 to 180, fall red 160 to 215, white 220, Zimmerman 235c. Increased supplies depressed prices by the 18th, and spring was sold at 160 to 170, mixed 175 to 195, fall red 175 to 225, fair white 220. The market after this, during the space of a week, dragged heavily, during which time spring was quoted at 160 to 165, mixed 165 to 175c., fall 155 to 222½, white 200 to 225c. Towards the close of the month, prices again advanced, the shipping demand continuing good, and spring sold at 170 to 185 to arrive, mixed 185 to 200, fall red 165 to 225, and choice white at 245c.

Prices during May were subject to only slight variations. On the 2d, buyers stood off, and a small decline resulted—spring 175 to 185, mixed 185 to 200, fall red and white 165 to 245. An increased demand from abroad restored prices after a day or two. By the 9th, the larger portion of sales was to shippers, city millers having purchased in country — spring 155 to 180, mixed 170 to 175, fall red 160 to 232½, prime white 230c. On the 12th, the supply and demand were about equal, Zimmerman at 237½, and prime white at 240c. Heavy receipts by the middle of the month dissipated the notion of short supplies to a great extent, and spring was quoted at 155 to 170, mixed 170 to 185, fall red 180 to 225, and white 230c. The market grew dull under the downward tendency of flour, and prices were quoted at 140 to 175 for spring, mixed 158 to 175, fall red 165 to 225c. Intermediate qualities showed a decline, and prime and choice, owing to their scarcity, were sustained. On the 30th, several lots were taken for Pittsburgh—the quotations at the time, 155 to 162 for spring, mixed 165 to 166, fall red 166 to 227, white 210 to 225c. The new crop was now looked for, and 5000 bushels prime Southern, deliverable in August, sold at 125c.

Buyers from the Ohio were in the market at the opening of June,

and previous rates were fairly sustained. Prime qualities continued in request, but other grades were less sought, and under the pressure which rendered flour inactive, city millers touched sparingly. A gradual decline commenced, and on the 23d, when the first lot of new wheat came on the market, quotations were given at 139 to 142½ for spring, fall red 147½ to 182. The lot of new grain referred to, was received from Cape Girardeau county, and sold at 265c. Receipts became lighter, but were equal to the demand, and when the month closed, old lots sold at 125 to 130c., good to prime spring, and 135 to 160, fair to prime fall.

It was confidently anticipated that the new crop would command 150c., but with a fair supply on the 7th, we quoted a decline. Several lots of old were still offered, and quotations ranged at 111 to 112½ for spring, 135 for prime fall, 145 choice white. A few days after sales of new made at 130 to 135c., immediate delivery, and 125 for future, spring 90 to 105, fall red 128 to 135, Zimmerman 135 to 145, the last prime old. Light receipts and an improvement on flour, advanced prices by the middle of the month, and fall red brought 125 to 145, white 150c. Liberal supplies were now received, and quotations exhibited the market at 126 to 147½ fall red, 146 to 150 white. Receipts became heavier, and a marked decline ensued, prime new fall red going at 127½, and prime white 140c. Prices still tended downwards, and on the 25th fair to prime red fall sold at 100 to 120, the last for Zimmerman. Advices, foreign and domestic, unfavorable, and every indication was that the market would settle at 100c. An outside demand sprung up at the close and arrested any further decline, and sales were made to shippers at 85 to 120c. common to prime fall red, Zimmerman 125, the former sacks included.

At the beginning of August, receipts had fallen off very largely, and quotations were 75 to 125c., inferior to prime—a large proportion of receipts, more or less damaged by the heavy rains at harvest time. The dashing rains visited the best grain growing sections, and the general tenor of the statements regarding their effects was that a great disaster had befallen the country. The final result showed the damage to be less than was supposed. By the 11th, receipts became better, and quotations evidenced an improvement in prices in the earlier part of the week, which was lost, however, by the close—at which time 120 to 125c. for prime red and white, with choice lots on privace terms, were reported. A week later, and inferior to prime, were quoted at 100 to 140c. Better prices at other points drew off large lots, and shipments to this port showed some diminution On the 25th, with better supplies, prices were quoted at 100 to 137½c, the last for a lot nearly all Zimmermann.

On the 1st of September, prime lots did not command over 120 to 125c. No change on the 8th. Receipts heavier. Prime dry qualities were scarce and in request. The market rose and fell at

this time under the influence of liberal or light receipts. Up to the middle of the month, prices showed no marked change, prime still quoted at 120c. On the 22d, very inferior to prime white quoted at 75 to 140c. Receipts less, with buyers in the market on French account. A good demand was also expressed for the Lake and Ohio markets. At the close of September, quotations were 100 to 150, inferior red to prime white. The demand from abroad, with the buoyancy of the flour market, led to heavy purchases, and with largely increased receipts, the market was buoyant at enhanced prices.

At the expiration of the first week in October, quotations were given at 100 to 158; inferior fall to choice white, generally at 115 to 145. Receipts greater. Prices going up with a good shipping demand. On the 13th, with increased supplies, the market stood 125 to 167c. poor to prime, and choice 180c. On the 20th, with heavier receipts still, prices were stated at 105 to 175, inferior to choice red, the bulk of sales ranging from 135 to 160. A demand equal to the supply continued. Receipts for the ensuing week were materially less, and prices stood at 130 to 175, common spring to prime white, the bulk of sales 137 to 170c. The market was now firm, and a general improvement on all the grades observable. An unabated demand, both from city manufacturers and shippers continued.

November opened with increased receipts. Closing rates on Saturday, 3d, 125 to 173c, inferior red to prime white. With larger supplies, prices declined, and on the 10th, the range was 125 to 166, poor red to prime white. The market at this time was severely tested by large supplies. On prime qualities a decline of 8 to 10c was effected, and 10 to 15c on intermediate. Purchasers kept the market free from any accumulation. Closing rates on the 17th, 130 to 175c, inferior red to prime white, with equal receipts. Advanced freights interfered to a greater or less extent with shipments. By the 24th, receipts had fallen off, and quotations stood at 125 to 180, inferior red to prime red and white. The month ended with sales at 125 to 190, inferior red to choice, bulk of transactions at 160 to 180c, with slightly increased receipts.

At the close of the first week in December, quotations were 125 to 180c., inferior red to choice white. The receipts of this week amounted to 90,000 sacks, the heaviest of the season. After this, supplies fell off rapidly—at the close of the second week 54,146 sacks received—third, 21,692, when navigation was suspended. The closing rates at this time were 125 to 155c, common to prime red fall.

The mills report on hand at the end of the year 308,000 bushels, and this, with the stock in store, is estimated at 500,000.

Statement of Extreme Prices of Flour at St. Louis, during the year 1855.

January	$7,00	to 8,50	July	$6,50	to 8,75
February	7,00	9,25	August	6,25	7,50
March	7,37½	9,50	September	5,90	8,00
April	8,25	11,50	October	6,37½	9,50
May	9,25	10,00	November	7,75	10,50
June	8,00	12,50*	December	7,50	10,00

* The extreme price here quoted seems to have been occasioned by a scarcety of prime wheat for the manufacture of extra flour for home consumption.

FLOUR manufactured in St. Louis at fifteen mills, amounted in 1855 to 603,352 barrels.

Monthly prices of CORN at St. Louis for five years.

	1851.		1852.		1853.		1854.		1855.	
Jan'y	44	48	38	41	35	45	34	52	52	72½
Feb	44	46	30	42	32	39	44	60	62½	72½
March	35	40	32	37	31	37	37½	50	57	78
April	35	40	33	36	30	42	37	49	70	95
May	34	38	30	43	35	44	40	50	80	105
June	33	36	35	44	37	48	31	46	58	100
July	38	43	35	48	36	58	28	50	55	76
August	35	40	40	45	39	61	45	61	60	75
Sept	33	38	40	45	39	50	50	60	50	63
Oct	35	40	40	45	38	54	52	60	55	65
Nov	31	36	43	50	37	40	58	68	50	75
Dec	35	40	41	43	34	44	64	85	48	67

The average price of the year 1855, as nearly as can be computed, is 68c., making the value of operations in this grain $2,024,000.

HEMP.—Imports of Hemp at St. Louis for 5 years:

	1851.	1852.	1853.	1854.	1855.
Bales	64,607	53,331	63,209	67,599	93,186

Monthly statement of extreme prices of undressed and dressed hemp at St. Louis during the year 1855:

	Undressed.		Hackled.	
January	$100	to 114		
February	95	105		
March	80	95	$140	
April	70	100	130 to	140
May	77	105	140	145
June	75	110	145	150
July	108	114	150	160
August	110	130	165	180
September	120	145	190	210
October	131	155	200	210
November	140	154	200	210
December	125	140	183	

By reducing the number of bales received during the year to tons (estimating 5½ bales to a ton), we have 17,000. The average price, as nearly as can be computed, commencing with the sales of March, when the first lots were received, is, on undressed $115. The proportion of hackled has not been correctly ascertained; but supposing the amount of this quality sufficient to justify an average of $1,20 per ton all round, the money estimate of the staple for the year exceeds $2,000,000.

Prices of Tobacco at St. Louis for ten years, compiled from the books of W. M. Price, tobacco manufacturer:

YEAR.	LUGS.		SHIPPING.		MANUFACTURING.	
1846.....	$ 50	to 1 00	$1 75	to 2 75	$3 00	to 5 70
1847.....	1 00	1 75	2 50	3 00	3 25	8 00
1848.....	1 00	1 75	2 50	3 25	3 25	8 00
1849.....	2 00	2 75	3 00	5 50	3 75	8 50
1850.....	4 00	4 50	5 50	7 00	6 00	10 00
1851.....	5 00	6 00	6 25	7 50	8 00	13 00
1852.....	2 00	3 00	3 50	5 00	4 00	8 00
1853.....	4 50	5 00	5 50	6 50	6 00	10 50
1854.....	3 50	4 50	3 75	5 00	5 50	15 00
1855.....	6 00	7 25	7 75	9 50	7 50	18 00

Prices of Whisky at St. Louis for four years:

	1852.	1853.	1854.	1855.
January	16 to 18	18 to 19¾	20½ to 23	23 to 27
February	15¾ to 16	18 to 19	21 to 23	25 to 28
March	15¾ to 16½	17½ to 19½	19 to 21½	24½ to 30
April	15¾	17¾ to 18½	18 to 22	30 to 38
May	16½ to 17	18½ to 19	19½ to 22	33½ to 38
June	16 to 17¾	19 to 22	20½ to 24	31 to 34½
July	16½ to 17½	22 to 24	23½ to 27	30 to 35
August	17 to 20	22 to 24	26 to 37½	32 to 36
September	18½ to 19	22 to 22½	31 to 35	35 to 37
October	16 to 18½	22½ to 26	33½ to 35	35 to 37½
November	18½ to 20	20½ to 23½	34 to 39	35½ to 36½
December	19¾	20 to 22½	35 to 45	32 to 35½

Arrival of steamboats for the year 1855:

	No. of arrivals	Tonnage
January	208	43,859
February	71	21,346
March	320	67,109
April	371	98,970
May	418	112,134
June	375	110,415
July	274	75,619
August	278	82,720
September	303	81,191
October	253	72,086
November	303	82,667
December	275	70,675
	3449	918,791

COMMERCE OF HANNIBAL, MO.

Statement of quantity and value of leading articles received at Hannibal in the year 1855.

(From the "Whig Messenger.")

DESCRIPTION.	QUANTITY.	VALUE.
Wheat, bushels	104,135	$145,789
Flour, barrels	600	5 000
Corn, bushels	18,870	6,227
Oats, "	45,590	11,397
Rye, "	426	362
Barley, "	540	675
Beans, "	140	210
Flaxseed, "	1,277	1 596
Timothy Seed, "	102	204
Tobacco, hhds.	853	75,836
Do. boxes	7,141	75,030
Hay, bales	2,722	7,753
Hemp, "	516	17,365
Bale Rope, coils	1,408	11,410
Cordage, packs	7	170
Bacon, casks	1,476	68,115
Beef, tierces	232	4,640
Pork, barrels	1,889	31,082
Lard, packs	3,643	69,850
Hams, tierces	951	33,012
Tallow, casks	28	3,046
Grease, barrels	93	1,280
Wool, sacks	33	2,310
Feathers, "	307	12,265
Hides	3,814	18,106
Furs and skins, bales and boxes	114	4,030
Deer Hair, sacks	56	300
Hogs' Hair and Bristles		500
Rags, bales	711	2,010
Jeans, Linseys, Socks, boxes	35	890
Buckskin Gloves, boxes	8	3,180
Butter, pounds	79,220	11,883
Eggs, dozens	3,500	280
Apples, barrels	2,191	4,930
Cider, "	11	55
Pickles, "	92	460
Venison Hams, casks	7	200
Bologna Sausages, pounds	1,500	300
Beeswax, casks	10	1,000
Brooms, dozen	50	100
Glue, barrels	13	600
Tar, kegs	50	50
Empty Barrels and Tierces	2,313	3,372
LIVE STOCK—Beef Cattle, head	3,062	107,860
Hogs	2,500	32,485
Sheep	1,650	3,300
Mules and Horses	512	41,000
		$819,516

DEPARTMENT OF INDUSTRY.

Missouri Coal.

Its Quantity, Quality, Prices, Prospects, &c, &c.

"Carrying Coal to New Castle."

OLD SONG.

Sense and spirit should be developed from the heads and hearts of the people, in order that coal and iron may be developed from the fields and mines in their possession.

To find fault is easy, to find wisdom is hard.

Bringing coal and iron to Missouri, and thereby losing as now $7,000,000 a year, while Missouri has not a dollar to spare, and more coal and iron than she can use to the end of the world, is a fault.

Sending coal and iron from Missouri, which contains $500,000,000,000 worth, to all the places on this continent, which now import from lands more distant; and in return bringing to Missouri the dollars which are now being paid to those more distant lands for coal and iron, and at the same time saving in Missouri the $7,000,000 she lost by importing coal and iron during the year 1855: this is wisdom.

The people and the legislature of Missouri have already developed some of their sense and spirit, as is proved by the liberal and judicious Railroad System and Geological Survey of Missouri.

Accurate intelligence is gained, by the report on the Geological Survey, regarding the coal and iron resources of Missouri, which were represented in the "Iron Man of Missouri," February, 1856, Western Journal & Civilian, vol. 15, page 202.

Positive information is given by the Freight Tariff on the Pacific Railroad, regarding the transportation of coal and iron to various distances, from 5 to 125 miles, which Freight Tariff was determined on the 1st of March, 1856, and may be used as a good basis for calculations of costs in carrying these as well as other resources of the State to the various distances along the lines of the other roads penetrating the coal and iron regions.

This important knowledge of the resources and of their freight-costs in various portions of Missouri, obtained by the Geological Survey and the Railroad System, which is a result of the partial development of the sense and spirit of the people and of the legislature of Missouri is producing an earnest and energetic movement

toward the development of the resources of the fields of coal and mountains of iron in the possession of the people.

And when the sense and spirit of the people is more fully developed,—at least so far that they can see in their minds and feel in their hearts the wisdom there is in saving the $7,000,000 a year, which they lost by importing coal and iron to Missouri in 1855, and the increased wisdom there is in the policy of supplying all places on this continent which are now dependent on England, though more accessible to Missouri, with the products of coal and iron; and in return gathering unto themselves the gold and silver which heretofore has been and now is taken away from America to England,—the amount of which to all foreign countries for iron and steel during the year ending June 30th, 1855, was $22,980,728, as shown in connection with the "Iron Man of Missouri" above alluded to,—when the sense and spirit of Missourians is developed fully enough to see and feel the wisdom of the policy by which they would save all of the $7,000,000* a year, and gain at least a large portion of the $20,000,000 a year,—more than all that which is paid out of the Mississippi valley—then they will prepare and pass laws to promote their mining and manufacturing interests, and invest and invite for investment capital in joint stock companies, with freedom from taxation and free banking facilities on State bonds.

And when the sense and spirit of Missourians is thus fully developed—every citizen within her limits rivalling each other in favor of this policy—priding himself on being an "Iron Man of Missouri"—then the earnest and energetic movement, toward the development of the resources of the fields of coal and mountains of iron in the possession of the people, which is now starting, will progress with persevering activity through ages of posterity, building up the State into a structure of substantial and splendid civilization and refinement.

Who now living will not hasten this result, that he may witness the civil conflict of the Iron Man of Missouri with the Iron Lord of

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* Imports of Iron to Missouri in 1855:

Ohio Valley Pig Iron, mainly Tennessee	$1,250,000
Ohio Valley Bar, Boiler, Sheet Iron, &c.	2,000,000
Scotch Pig Iron; Scotland	70,000
Railroad Iron, England	680,000
Hardware, Cutlery, Guns, Steel, &c., from Europe, Atlantic States and the Ohio Valley—Iron not above estimated, about	2,000,000
	$7,000,000

England and aid in the glorious struggle of Domestic Industry by which the bondage of English iron despotism will be broken, the material as well as political Independence of America declared and maintained, and England compelled to repay to Missouri the tributes she is now exacting from America in gold?

One of the main lines of industry to be pursued in order to realize the peaceful triumph of Missouri over English Arts is in the development of the greatest producer of Arts—the great essential producer even of Iron:—Coal.

By the Iron Man of Missouri it was shown, on the record authority of Prof. Swallow, State Geologist, that the coal-beds of Missouri can furnish 100,000,000 tons per annum for the next 1,300 years. So far then as concerns the quantity of Missouri coal, positive information is gained. The locality of it is along the lines of the Pacific, the North Missouri & the Hannibal & St. Joseph Railroads and along the Des Moines and Missouri rivers.

Prof. Swallow adds that "regular coal measures, also, exist in Ralls, Montgomery, Callaway, St. Charles and St. Louis; and local deposits of cannel and bituminous coal in Moniteau, Cole, Morgan and probably in other counties."

Dr. B. F. Shumard, Palæontologist and Assistant Geologist, states that the coal formation in St. Louis County "occupies an area of about 160 square miles, and lies chiefly in the north-east portion of the county." From the minute data given in his report in regard to the three seams, and the thickness of each, it is found that these 100,000 acres of coal fields in St. Louis county contain at least 480,000,000 tons of coal.

Although the locality and the quantity of Missouri coal, is now well known, by virtue of the Geological Survey, yet another fact of vast importance—the quality—has not yet been conclusively determined by the same scientific and practical authority. Various skillful analyses, and trials on a large scale, will probably be reported next year, by the energetic officer in charge of the Survey. This task is laborious, and the owners of the coal should co-operate with the Geologist, by sending from all the leading coal beds in the State, one ton for trial.

But as the minds of many sensible and enterprising men in Missouri are blinded with the opinion that Missouri coal is "poor," "won't coke," "can't make gas," "ain't fit to make iron with," &c., &c., &c.; and by means of this blind opinion, the progress of

the earnest and energetic movement now starting toward the development of the fields of Missouri coal and mountains of Missouri iron, has been and is now impeded; it becomes the duty of every enlightened Publicist to remove the impediment, throw off the clouds of prejudice, and open the eyes and hearts of every man in Missouri to a just appreciation of the virtues which have been found by scientific and disinterested men who have analyzed the qualities of Missouri coal.

And when the facts now scientifically ascertained are universally disclosed and popularly understood, and the relative quantity and quality of Missouri coal is compared with the most famous coals of England and America, then will the eyes not only of Missourians, but of the civilized world be opened with astonishment at the brilliant prospect shining in the dawn of Missouri glory.

With much, laborious research, among other sources of information, we have closely examined the "Report of Experiments on the evaporative power and other properties of coals, made under authority of the Navy Department of the United States; by Walter R. Johnson." This is a work of 607 pages, octavo, read and refered to the Committee on Naval Affairs, June 8th, 1844.

Without dilating on the immense amount of information contained in this voluminous report, we will herein present a Table of Analysis of Coal, culled from the various portions of the Report, and prepared with accurate averages, representing the quality of coal in 14 different localities, throughout Great Britain and United States, including the Osage, Missouri, Coal with the most famous in the world:

Table of Analysis of Coal from 14 *Localities in Great Britain and United States.*

Locality.	Moisture.	Oth. Volatile matter	Fixed carbon.	Earthy matter.	Ratio of volatile to carbon.
Lehigh, Pa	2.347	2.938	88.603	6.112	
"Natural coke," Va.	1.116	11.977	75.081	11.826	1:6.2688
Neff's Cumberland, Md.	2.455	12.675	74.527	10.343	1:5.88
Cambria County, Pa.	.992	19.975	66.918	12.205	1:3.485
Clover Hill, Va.	1.339	31.698	56.831	10.132	1:1.7929
Midlothian (average) Va.	2.455	29.796	53.012	14.737	1:1.78
Liverpool, England.	892	39.587	54.899	4.622	1:1.513
New Castle, England	1.346	28.312	66.586	3.756	1:2.3519
Scotch, Scotland	3.013	38.837	48.812	9.338	1:1.2569
Pittsburg, Pa.	1.397	31.538	63.350	3.715	1:2.0139
Cannelton, Ind.	2.597	33.992	59.469	3.942	1:1.7495
Caseyville, Ky.	1.151	30.669	44.493	23.687	1:1.45
Wheeling, Va.	1.414	42.626	52.030	3.930	1:1.22
Osage river, Mo	1.67	41.83	51.16	5.34	1:1.223
Average of 14 localities.	1.721	28.317	61.126	8.834	

From which table it appears that the Osage, Missouri, coal has less moisture and less earthy matter, and presumtively more combustible elements than the average of all the other coals; and further that it excels in all these points the average of the Liverpool, New Castle and Scotch coals, which themselves, on an average, as appears from calculations derivable from the above table, excel in all these points the average of all the above mentioned coals, as is illustrated by the following Table of Analysis of Missouri Coal and average of foreign and average of all.

Table of Analysis of Missouri Coal and Average Analysis of Foreign and of Choice American and Foreign Coals.

Locality.	Moisture.	Oth. Volatile matter	Fixed carbon	Earthy matter.
Missouri [Osage] Coal	1.67	41.83	51.16	5.34
Aver'e of Liverpool, New Castle & Scotch coal	1.750	35.578	56.765	5.905
Average choice foreign and American coals	1.721	28 317	61.126	8 834

The above mentioned analysis of Missouri (Osage) coal was published in the Western Journal, vol. 6, page 233, in connection with an article on the Mineral Wealth of Missouri, and the movement made by the Callaway Mining and Manufacturing Co. to open their "Mammoth" and their "Mastodon" mines on the north side of, and about five miles from the Missouri river, and near the mouth of the Osage.

The "Mastodon Bank" has been tested and found to be cannel coal—75 feet thick, and in appearance it resembles the Osage coal.

We have heard not much about the progress of the movement made by the Callaway Mining and Manufacturing Co., since their mine was tested in 1851. The Company was chartered in 1847, and consisted of Philadelphians, who were reported in 1851 as owning about 3000 acres of land, embracing the Mammoth and Mastodon coal beds, lying from 4 to 5 miles from the Missouri river, near Cote Sans Dessein, and that the whole tract is a continuous coal field, that the out-crop along the bluff varied from 3 to 10 feet in thickness of seam, which, by sinking a shaft at the Mammoth Bank, was proved to be 24½ feet thick, that the line of a railroad had been located 5 miles long, connecting the Mastodon Bank with the river, that the ground was broke and a portion of the road graded.

During 1855 the rails arrived, and we hear that the road will be in operation this spring, 1856.

The first train of freight cars ran from St. Louis to Jefferson City, 125 miles, on the Pacific Railroad, Monday March 4, 1856.

At the mouth of the Osage river, 116½ miles from St. Louis, which is nearly opposite the Mastodon mine, or at L'Ours Creek Station, 108½ miles from St. Louis, more nearly opposite Cote Sans Dessein, this Mastodon coal may be placed on the track of the Pacific Railroad in car-loads of 10 tons, and brought to the city of St. Louis at a freight cost of $20 a car-load.

The distance from the mine to St. Louis is stated at 120 miles. The Mining Co. will be at the cost of transporting the coal across the Missouri river and altogether about 7 miles, from the mine to the Pacific Railroad. To determine the cost of this transportation is somewhat difficult; but by loading the cars at the mine, on their own track, and by transporting the coal in the cars across the river on boats and thus bringing it to St. Louis without the labor of re-handling the coal on the way, doubtless, immense cost would be saved.

As it is impossible, at present, to arrive at exact figures of the total cost attending a bushel of coal from the Mastodon mine to the city of St. Louis, since, from all that we have been able to learn on the object, no positive plan of transportation has yet been determined upon, and we have as yet been unable to hear a word direct from the Mining Co. on this subject, it may be advisable, in order to throw some light on the question, to assume certain reasonable data by which one may arrive, as nearly as possible, at present, to a settlement of this question.

In the *Mining Magazine*, of April, 1855, vol. 4, pages 233 to 237, we find a treatise on the "Cost of mining the coal and getting it to market."

And from this treatise we will copy a portion of an "Estimate of the cost of getting out a ton of Cumberland coal and sending the same to market, based upon a trade of 50,000 tons the first year.

Expenses inside,	cents.
Mining	35
Labor on trackway	1.25
Salary of chief miner and weighing	1.71
Props, ties and cap pieces	1.23
Oak scantling for trackway	1.10
Iron rails	55
Ventilation, repairs and renewal of tools	90

Hauling out	3.	—44.74
Oil and axle grease		.70
Repairs cars:		
Iron and lumber	.63	
Labor	.56	
Renewal	.60	—1.79
Loading into large cars:		
Weighing and manifesting	.90	
Labor	2 00	—2.90
General Expenses:		
Superintendent	3.	
Labor	.87	
Contingent and Miscellaneous	2.	—5.87
Costing per ton, delivered into the large cars		56 cts.

That this item, thus arrived at, may be more thoroughly understood, we will quote from the letter, dated Mount Savage, Md., Feb. 26th, 1855, and addressed to R. G. Rankin, Esq., N. York, written by the author of the above estimate, C. Slack, Esq., who comments on the above estimate as follows:

"The paper relative to the cost of mining a ton of coal and sending it to market, was prepared with great care, and I commend it to your confidence as the result of close investigation of the subject. I have had occasion, in the course of several years' experience, to know, that placing the items of *mining* at 35 cents per ton (the present rate paid,) the average cost of the coal placed upon the cars, in quantities not exceeding the rate of 50,000 tons per annum, cannot be less than 56 cents. I have seen estimates of various companies, who place the rate ranging from 49 to 55: and in regard to the extent which a larger trade might affect the rate, I would give it as my opinion, that mining 75,000 tons per annum, it might be reduced to 53 cents; 100,000 tons to 49 cents, &c. In a business of the magnitude of 300,000 tons per annum, I believe (placing the item of mining at 30 cents, to which I think that feature will be ultimately and *permanently* reduced,) the coal could be placed on the cars at 42 or 43 cents per ton."

We would here add that Mr. Rankin, remarking on Mr. Slack's estimate, says that his "long experience and practical knowledge give to his opinions great value. His estimates may be relied on with entire confidence."

Assuming then that this item may be relied upon; and taking for granted, as has been intimated to us, by the Chief Engineer of the Pacific Railroad, that a special contract might be made to transport 50,000 tons of coal a year, from the Osage river to St. Louis, at the cost of $20 a car load of 10 tons, which would pay

$100,000 a year to the Pacific Railroad, and be only $2.00 a ton, we find that the amount of these two items: loading the coals at the mine, at 56 cents per ton, and transporting it—say 112 miles, at $2.00 per ton, amounts to only $2.56 per ton. Yet the cost of transporting the coal from the mine to the Pacific Railroad—say 8 miles—remains undetermined. In consideration of crossing the river on boats especially designed for transporting loaded cars, allowing the Mining Co about one third as much for the 8 miles, as is allowed the Pacific Railroad for 112 miles, it may be proved reasonable to estimate this cost at 66 cents per ton; and then allowing the Coal Co. 1 cent a bushel: 28 cents per ton, as their profit on the coal, this result may be stated as follows:

Original price of coal in the mine per ton.....	28 cents
Cost of mining and loading cars.....	56
Freight 8 miles to Osage river	66
Freight, 112 miles, to St. Louis.....	$2.00
Total cost in St. Louis.....	$3.50

Value of the 50,000 tons $175,000.

Price in St. Louis, 12½ cents a bushel.

Pittsburg coal delivered on the wharf at St. Louis commands 25 cents a bushel.

Although the price of the Mastodon coal of Missouri may range at first from 15 to 20 cents a bushel in St. Louis, it will doubtless relieve Missouri from heavy importations from other States, both for gas and coke purposes, and stimulate the activity of the iron and every other manufacturing pursuit.

The St. Louis Gas Light Co., in the report for the year ending November 30th, 1855, state that the Pittsburg coal received by them during the year was 312,000 bushels.

The Excelsior Stove Works of Mr. Filley alone make a yearly demand of 50,000 bushels, or its equivalent in coke, while the Empire Stove Works, Eagle Foundry, Mississippi and Washington, together with various other iron establishments of St. Louis, consume directly, as is estimated by those conversant with this trade, about 138,000 bushels more, making the whole amount imported from Pittsburg to St. Louis during 1855, about 500,000 bushels, which at the firm price of 25 cents a bushel on the wharf, makes $125,000.

Estimates formed by close observers, represent that the amount of Pittsburg coal used in the various other cities along the Missis-

sippi river from Iowa to Louisiana, now annually equals the amount of it used in St. Louis, which added together are 1,000,000 bushels, and price over $250,000.

The Lehigh [Anthracite] coal is also imported to Missouri. About 350 tons of this coal, costing $20 a ton, were consumed by the Excelsior Stove works in 1855; and they expect to use, during 1856, at least 400 tons, having a standing order for 50 tons a month, price now, March, 1856, in New Orleans $11 a ton. The present demand for Lehigh coal in St. Louis equals about 800 tons a year, price last year $20 a ton, total cost $16,000. Price falling.

In the *Journal & Civilian* for February, 1856, we stated, on the authority of a coal merchant, who had been anxious to learn exact figures of the Coal Business of St. Louis, and who, to gain that end, had then visited three mines in Illinois and five mines in Missouri, and learned the exact amount they had turned out during 1855, and, from his general knowledge of the business of the remaining mines in the neighborhood of St. Louis, on both sides of the river, had formed an opinion of the whole amount of Illinois and Missouri coal consumed in St. Louis during 1855, that the largest estimate was 14,600,000 bushels, which at 11 cents a bushel, is $1,606,000.

Since then, this opinion has been confirmed in various ways, and as an illustration we will herein state the last case.

Early in March, 1856, we inquired of Mr. J. R. Griffith, of the Belleville Coal Co., at their depot in St. Louis, his opinion on this subject: his answer was: put down the Illinois coal at 12,000 bushels a day, for every working day, say, on an average, 300 days in the year; then put down the Missouri coal at about three times that amount. We did so, and arriving at his opinion, as any one else may, on the same data, found that, according to it, the quantity of Illinois coal brought to St. Louis yearly was 3,600,000 bushels, and of Missouri coals 10,800,000 bushels: total amount 14,400,000 bushels, which, at 11 cents a bushel, is $1,584,000.

In answer to the question about the average yearly price of the Illinois coal, Mr. Griffith replied that an estimate might be formed from the contract made by Mr. Edward Boyle, of the O'Sullivan Iron Works, with the Belleville Coal Co., for 150 bushels a day, during 1856, at 12 cents a bushel: that being the lowest contract made.

A continued stream of customers was flowing in and out of the office of the depot, while the above, with other intelligence, was communicated by the gentlemanly proprietor; many of the customers making solicitous re-applications, on orders previously made, and that could not be filled on account of the number of demands. The price cheerfully paid at the office was 18 cents a bushel.

Mr. Griffith, although overrun with business, very politely further informed us that the Belleville coal was brought about 15 miles by the Belleville Railroad, at a cost of $5 a car load of about 10 tons, the Coal Co. loading and unloading the cars, with a penalty, after 24 hours. At the Railroad Depot the coal is transfered from cars to waggons, and brought about two miles to the Coal Depot in the city. Ferriage 60 cents for a two horse load, averaging—from 1 to 2 tons—from 28 to 56 bushels. City Weighers charge 25 cents for weighing a load.

The estimate of the business of the Belleville Coal Co. for 1856 is, at present demand and supply, 1000 bushels a day, for the 300 days: 300,000 bushels.

The Belleville Coal Co. is composed of individual companies, of coal merchants in Belleville, and Mr. Griffith conducts the Belleville coal business in St. Louis.

Mr. Boyle, proprietor of the O'Sullivan Iron Works, informs us that the Belleville coal, works, in his fires, nearly as well as the Pittsburg coal; and, as the mining is extended in the bed, the coal improves in quality.

The coal of Belleville may soon be proved to be the richest source of wealth to that rapidly prospering city.

From the above facts and estimates of consumption of coal in St. Louis in 1855, including Lehigh, Pittsburg, Illinois and Missouri coals, which facts and estimates may now be considered as positively ascertained, we will table their amount in dollars as follows:

Lehigh [Anthracite] coal.....	$ 16,000
Pittsburg [coke and coal].....	125,000
Illinois coal, at 12½ cents a bushel.....	450,000
Missouri [St. Louis] coal, at 10½ cents a b.	1,134,000
Total amount consumed in St. Louis during 1855,	$1,725,000

A difference of from one to two cents, above the average, 11 cents, is allowed in favor of the Illinois, on account of its superior

quality, over the St. Louis County coal. The estimate of 11 cents a bushel, as an average of the amount of the two together, is maintained by calculating Illinois coal at 12½ cents a bushel, and Missouri [St. Louis County] coal at 10½ cents a bushel, in the proportions stated, ¼ Illinois, ¾ Missouri, as may be proved by multiplying their total amount of bushels, 14,400,000 by 11. These are practically and theoretically accurate prices.

In addition to the above, if the Callaway Mining and Manufacturing Co. bring their Mastodon, cannel coal, to St. Louis, at the rate herein before presented, say, during the first year at the cost to the consumer of 15 cents a bushel, and in quantities equal to 50,000 tons a year, as estimated: these 50,000 tons, being 1,400,000 bushels, at 15 cents a bushel, amount in value to $210,000. If the practical value of this Mastodon coal should be proved to be equal to its scientific interest, doubtless the demand and the supply of this amount will be made during the present year..

We will therefore add to the total amount of coal yearly consumed in St. Louis.....$1,725,000
Mastodon [Mo.] coal, 15 cents a bushel..... 210,000

Total amount of coal for 1856.....$1,935,000

By driving on the iron and other manufacturing business in St. Louis, at the progressing rate desired, advised and positively anticipated, in addition to all the above calculations, the Belleville Railroad Co. may be called upon, before next summer, to transport, for the [Belcher] "Iron & Coal Co.," the "St. Clair Coal Co.," and for Goalby & Co., from 15,000 to 20,000 bushels a day. Should plans, now laid in this line be realized, it will be necessary during the year to add from $500,000 to $750,000 to the above table of coal for 1856.

Assuming a point below the average of these two estimates, and re-arranging the last table, we present the following as a fair

Prospective Table of the Coal Trade of St. Louis for 1856.

Renewal of amount of 1855.....$1,725,000
Mastodon [Mo. Pacific R. R.] at 15 cents a bushel... 210,000
Illinois Cos. [Belleville R. R.] at 12½ " " ... 600,000

Total prospective amount for 1856.....$2,535,000

To this will, doubtless, be added, before the close of the year, large amounts of fine cannel coal from Cole county, west of Jeffer-

son City, nearly 140 miles from St. Louis, also from the mine discovered on the line of the North Missouri Railroad, about 10 miles from St. Louis, beneath the micaceous sandstone in the field indicated by Dr. Shumard, Palæontologist and Assistant Geologist, as represented by the "Iron Man of Missouri."

But that this great increase of coal business may be realized, and as the question of the *quality of Missouri coal* is the great leading one now necessary to be distinctly understood, in order that capitalists may be thoroughly advised of the profits to be derived from the manufacture of Missouri iron from the ore; and, as, if, from a variety of experiments on the coal of all the largest and most accessible fields, certain, uniformly superior results are gained, thousands of skillful workmen, and millions of foreign money may be invited and received from Europe by Missouri during 1857; it becomes the manifest duty of the State,—if the hundreds of private owners of these fields are too poor in spirit,—in cash or otherwise to co-operate in ascertaining this secret of wealth, most fit for a statesman of Missouri to know;—we say, it becomes the manifest duty of the State, as soon as possible, to settle this main, material question, on which thousands of people and millions of money are depending.

The present appropriation of $25,000, for the continuation of the Geological Survey of Missouri, is not sufficient, with the fulfillment of other obligations, to meet the expense of the trials of the qualities of the various coals, on so large a scale as is requisite, for their practical as well as scientific demonstration.

Two tons, 56 bushels, should be employed on the trials of each sample.

From 30 to 50 samples of various of the best mines, most accessible by rivers or railroads, in different portions of the State, might soon be brought to St. Louis, at the cost of the owners of the mines, and they, in conjunction with parties interested in the iron business, might easily raise a fund sufficient to make both scientific and practical tests and trials of the quality of each sample of coal, by furnace cokings and by skillful analyses of the various coals and of their respective cokes.

If the State Geologist, Prof. Swallow, who is liberal in his sentiments, should feel unauthorized, according to the law and his commission, to co-operate in such an enterprise; we trust that an effort

will be made this spring to effect it exclusively by the private means of our public-spirited men.

The vast importance of this question demands a complete and speedy solution.

NOTE.

Since the above was written, in a conversation on this unknown subject,

Rudis indigestaque moles,

Rude and undigested heap,

of coal business, which was "without form and void" of system, we have been advised by a high-minded and honorable gentleman and public-spirited man, who is not an owner, either in coal-mines or iron mountains, but who is magnanimous as unpretending; that if the owners of the coal fields of Missouri would send from the various mines of the State samples of two tons for trial to St. Louis, he alone would encounter the costs of the coking trials.

Let then the owners of coal-fields in the counties of St. Louis, St. Charles, Ralls, Montgomery, Callaway, Morgan, Cooper, Pettis, Johnson, Saline Lafayette, Jackson, and as many more of the coal counties of North Missouri, along the line of the North Missouri and of the Hannibal & St. Joseph Railroads send their samples to St. Louis, or communicate with us, and we will privately inform them who will try the coking qualities of their coal, and thereby add thousands of dollars to many of the individual owners of the coal-mines, and millions of dollars to the State.

And now if the owners of the fields of coal, and mountains of iron, in Missouri, together with the Pacific, the North Missouri, and the Hannibal & St. Joseph, the South-West Missouri & the Iron Mountain Railroads, who are all, financially, deeply interested in the result, could agree to engage the services of a distinguished chemist, to determine the qualities, and especially the genuine coke elements, of the Missouri coals, on a liberal system,—

"A consummation
Devoutly to be wished,"

then, in conjunction with the leading spirit alluded to in the first part of this note, the solution of this question of the QUALITY OF MISSOURI COAL FOR THE MANUFACTURE OF MISSOURI IRON, which is of the vastest importance to the prosperity of the State, would be speedily and completely presented to the world.

As additional information on coke and its relation to coal, we quote the following:

From the Engineers' and Mechanics' Pocket-Book, by Chas H. Haswell, Engineer in Chief, U. S. Navy, page 225, on the subject of combustion:

COKE.

"Sixty bushels* New Castle coals [lumps] will make 92 bushels good coke, and 60 bushels [fine] will make 85 bushels of a similar quality.

"60 bushels New Castle and Pictou coal [one half of each] make 84 bushels inferior; 60 bushels Pictou or Virginia coal, make 75 bushels of bad.

"A bushel of the best coke weighs 32 pounds.

"The production of coke by weight is about $\frac{2}{3}$ that of the coal.

"Coal furnishes 60 to 70 per cent. of coke by weight.

"1 pound in a common locomotive boiler will evaporate 7$\frac{1}{4}$ pounds water at 212° into steam."

* Winchester bushel—2150.42 cubic inches.

Having obtained additional data directly on this subject,—from the Geological Report of Dr. D. D Owen, on the Coal District of the Saline Coal and Manufacturing Co., of Southern Illinois, we have compiled and present the following:

TABLE OF ANALYSIS OF COAL FROM SALINE AND OTHER LOCALITIES.

Countries.	Illinois.		Ohio.	Pennsylv'a	Missouri.		Virginia	Great Brit'n
Mines.	Saline, Anvil Rock.		Pomeroy.	Youghiogheny.	Callaway and Osage.		Clover Hill.	New Castle.
Thickness of Seam.	4 feet.			4 feet	30 to 50 feet.			
Specific Gravity.	1.273		.....		1.400	1.264	1.285	1.25
Total volatile matter.	34.55	40 30	.....	36.46	37.70	32 80	32.94	37 60
Coke.	65.45	59 70	.....	63.54	62.30	67.20	67.06	62.40
	100.	100.	.....	100.	100.	100.	100	100.
Moisture.	2.00	1.00	3.49	1.11	0 0	4.00	73	1.77
Volatile & bitum. matter	32.55	37.30	35.80	35.35	37.70	37.20	32 21	35.83
Fixed carbon in coke.	54.45	56.70	47.72	60.14	31.80	28.80	56 83	57·00
Ashes	11.00	5 00	12.99	3.40	27 50	30 00	10 23	5.40
	100.	100.	100.	100.	100.	100.	100.	100.
Color of Ashes.	White	Steel Grey.	White	Grey.	Light	Grey		
	Swells in coking, not disposed to coke in burning, gives out a bright clear flame, very free from smoke, superior for grates.		Slaty, free burning, leaves no clinker.		Free burning, dull fractured cannel coal.			In very general use throughout England.

"When more than one analysis of the same Seam of coal is given, the specimens were taken from different portions of the Seams."

"The English coals selected for the table, closely resemble the coals of the Saline Co., and are from celebrated Iron Works."

As it is seen from the last analyses of Missouri coal, that Dr. Owen differs widely from Prof. Johnson on the question of earthy matter in the Missouri (Osage) coal, we deem it proper here to re-publish in full, all the comments made by Prof. Johnson, in the U. S. Service, on the qualities of the Missouri (Osage River) coal.

We quote from the Report above alluded to, page 539:

"A specimen from the Osage river, Missouri, had, in its dry state, a specific gravity less than 1, as it floated on water. When allowed to imbibe water, it sank, and was, when fully saturated, found to have a specific gravity of 1.2. It contained—

Moisture, expelled at 230°	1.67	per cent.
Other volatile matter	41.83	"
Fixed carbon	51.16	"
Earthy matter	5.34	"
	100.	

A trial for sulphur gave 0.482 per cent of that material.

From the above analysis, the volatile is to the fixed combustible as 1:1.223. An analysis by the chromate of lead and the chlorate of potash, proved the combustible matter of this specimen to consist of—

Carbon	81.855=13.642	atoms.
Hydrogen	6.168= 6.168	"
Oxygen, &c	11.977= 1.497	"
	100.	

From this analysis, the computation of evaporative power, assumed to be proportionate to the carbon, will give a result of 10.256 to 1 of combustible, and of 9.66 to 1 of the raw coal."

And we would add that we are advised by engineers and foremen of foundries in St. Louis who have used small samples of the Osage and Callaway coals under their boilers and in their furnaces, that not a particle of clinker was left after the combustion of the coal, to injure the condition of the grates, or the iron melted.

By establishing the coal business of St. Louis on a regular system, more money might be made by many of the mine owners, as well as saved by the consumers of coal, while the price may be reduced from 11 to 5¼ cents a bushel.

Taking the Florisant station mine on the North Missouri Railroad, as an illustration, we find

Cost of coal unmined per ton	28	cents.
Cost of mining and loading cars "	56	"
Cost of freight 10 miles "	42	"
Total cost of coal in St. Louis per ton	$1.26	cents.

As there are 28 bushels in a ton, the total cost of this coal in St. Louis, is 4½ cents. Allow 1 cent more on a bushel, to the coal-merchant for delivering the coal at the door of the consumer and we realize the amount predicted: 5½ cents a bushel.

Thus, in the use of coal only, by virtue of the North Missouri Railroad and the establishment of a regular system in coal-business, the people of St. Louis may save, every year, several hundred thousand dollars.

By establishing a similar system in Illinois, and by building a Bridge across the Mississippi river, among other immense savings, the Illinois coal could be brought by the Belleville, the Ohio & Mississippi and other railroads of Illinois to St. Louis, 7 cents a bushel cheaper than it is now.

Applying this difference of price to the business of the year, 1855: 3,600,000 bushels, there would have been saved $252,000,—more than a quarter of one million dollars. And as plans are now laid, to double, in St. Louis, the amount of Illinois coal-business during 1856, we may reasonably estimate, with the System suggested and Bridge constructed, the citizens of St. Louis would save, in the item of only the Illinois Coal Trade, during 1857, $500,000; which, with other sums thus saved, by measures of Public Economy, should be invested in Institutions for the promotion of Science and the Arts, Education and Christian Charity

LITERARY DEPARTMENT.

AMERICAN PROGRESS.

BY L. L. C.

Turn from the petty discords of the day,
That hang like mists around the rising sun,
Broken, dispersed, or catching from his light
A rosy flush, across their darkest frown.
Turn to our land, that still calls down from heaven,
Its warmest smile and blessing. Still her march,
Godlike and earnest, stretches to the goal
Of happiness and freedom. She has given
To every treasury some noble gift:
Science hath spoken—at her bold command,
Behold the tunnel pierced, the ravine filled,
The obstacles of nature cast aside,
The railway's track of fire, still pressing on
Into the wilderness. Thick overhead,
The electric messengers are weaving fast
A gleaming network in the shining skies.
The white winged ships, the ocean steamers fly
With royal freights to every distant port.
Amid the thousand flags, the sea breeze fans,
Our eager eyes find still, the floating stars,
The loftiest there. Beneath their radiant folds
The tyrant quails, the oppressed in safety rest.
The mighty Press, the guardian of the free,
Kindles afresh its "intellectual fire,"
And from its "mental magazine," calls forth
The weapons of an all resistless power.
Men of pure thought, and lofty brow arise,
And poetry and sculpture come to bless
Our young Republic with their classic glow.
And still the cry is onward. Human will
Is waking to a knowledge of its strength,
And bringing every hidden treasure forth.
Now, the vast Nation with prophetic hand
Points to the far Pacific, and lays down
A pathway for the iron hoof of steam,
Connecting by its sinuous line of flame
Two oceans, and the inland tide that drains
An empire's breadth in its descending flow;
(Then will the wealth of East and West pour forth
Into this glorious Valley, and the spires
Of cities, that will rival ancient Tyre,
Spring up by magic on its fertile banks—)
What though the treacherous stream, the trackless sands,
The granite mountain piercing to the clouds,
Should seek to bar its progress. They will yield
Before the undaunted arms, that wheel along
The car of labor, and are ever found
Foremost, whene'er their country calls for aid.
And farther still and far the light is cast—
A voice from California's golden beach
And Oregon's majestic shore, hath sent
A thrilling mandate o'er Pacific's waves—
Isle after isle has caught the joyous cry,
Till every spicy grove, and heathen shrine
Rings out the glad Eureka! On, they press,
These messengers of power and peace to men—
The enlightening influence of advancing mind
The thousand wonders of the magic touch
Of science on the hidden wealth of earth,

And holier, brighter far, the sacred rays
Piercing the cloud that superstition spreads
O'er summer's realm, and nature's calm retreats,
And throwing round the idol's ghastly shade,
The glorious halo of the Christian's cross.
With such a field for labor, who would turn
From the Herculean task, the future spreads
Before the untiring spirit of the age,
To linger o'er the trophies of the past;
And folding up their energies, sit down
Content with what the mighty men of yore
Gave to the generations, which they blest.
We cannot stay the torrent, if we would,
Or furl the sail, or idly rest the oar.
The vast machinery of a startled world
Hath waked to sudden action. It bestows
Unnumbered iron sinews, where the arm
Of human weakness wrought. With lavish hand
Does Nature send her willing vassals forth,
When Genius calls. The hour seems hastening on,
When knowledge o'er the earth, shall spread her flood,
As waters o'er the sea—and mystic hands
Are trembling to let fall millenial folds
Around the sin and sorrow of mankind.

HAZLEWOOD, PIKE CO., MO.

THE PLAINS.

(*Continued from page* 445, *Vol.* 10, *Western Journal.*)

BY FRANCOIS DESMONTAGNES.

CHAPTER XII.

Which relates in an impartial manner how the Pawnees surprised the Packsaddle Exploring Expedition, and how that celebrated body turned around afterwards and surprised itself.

"He awoke to hear his sentries shriek,
To arms! they come! the Greek, the Greek!"—MARCO BOZZARIS.

"For very joy in a glorious name,
He rushed where danger stood;
And that Banner plume, like a winged flame,
Streamed o'er the field of blood.
His followers loved to gaze,
On his form with a fierce delight,
As it towered above the battle's blaze,
A pillar midst the fight."—BANNER OF MURAT.

As poets are said to avail themselves of a peculiar license in the way of turning and twisting their various themes, and often dodging around them so carelessly as to leave them entirely to the imagination of the reader, and as historians are frequently, as a matter of necessity, supposed to be ubiquitous, it is but fair to presume that chroniclers of important enterprises, and more especially those of the Xenophonian school, should also enjoy *some* corresponding privileges, and be permitted now and then to diverge for a while from the direct line of detail, and dash off like the hunters we have mentioned, to a greater or less distance into adjoining grounds. In this veracious volume we have resolved to attempt a few harmless manoeuvres of this sort, even at the peril of our bones over some unseen dog town or slumbering bull; as we hope thereby to catch a glimpse of many a snug little wonder

lying off the road, which would otherwise remain unnoticed for several centuries yet to come.

Still, it must not be inferred by the anxious reader from all this galloping out and in of the lively members of the glorious centre and the corresponding digressions of the humble chronicler who narrates their deeds, that the onward velocity of the Pack-saddle Expedition, was the least impeded thereby, or even likely to be: not at all; stop them? Delay them? not a bit, not a jot: on the contrary, that important body kept the even tenor of its way through thick and thin, grass, gravel, dog towns, buffalo and snakes, with all the sang froid with which wisdom and experience are ever invested. It preserved its cool, calm, modest exterior through all these incredible trials, and the very pace at which it still travelled, was the identical dog-trot with which it started from the Blue: It halted not under any circumstance, and its demeanor underwent no change, nor did a muscle relax at the strangest sights; horned frogs skated around it, and rattlesnakes hissed in coils beneath it; but it wagged on like old Time for all that. It was not that kind of corporation which cared for outsiders, and as it shuffled along the route laid down on the map for it to follow, it never troubled its head at all about the price of corn, even if it *did* ride Uncle Sam's long eared ponies.

Whilst the two unfortunate hunters left in the rear, trudged wearily along on foot with strained eye, the imperturbable main body continued its lightning career towards the setting sun; not unlike some portentous comet dashed athwart the west, but with an amputated tail dangling and dodging far behind.

In order to connect our surveys *possibly*, or may be to take advantage of the better route, or, probably, we presume, to chastise the rascally Pawnee Indians of "*these United States around here*," who had attacked us on a previous trip when we were green and easily scared, and had plundered us of everything which looked like whiskey or tobacco,—we crossed the fork we were following to its north bank; executing this strategic movement by means of a bridge.

Not a bridge of boats or ships like that which Xerxes built, nor a Bridge of Sighs; but a regular out and out old-fashioned Remington of the original kind, having very little supension, of course, but inconceivable adhesion; made up of whatever material came readily to hand such as brush, saplings, mud, sand, leaves, and a vast amount of water and swearing, with some little patience, pushing, poking, powow and science inserted as tressel work. On this bridge of Oaths, which [the bridge of course] came almost to a level with the water in the creek, our entire armament crossed; observatory, rickety waggons, officers, telescopes, race horses, loose mules, pack mules, impenetrable centre and all,—in perfect safety! Counting ourselves over several times, to make sure that none were lost in the passage of this modern Granicus,—and ascertaining our numbers to be correct, we left the bridge in statu quo, or about a foot below the water, and set off once more about our business, fully assured that no enemy on the trail would attempt to cross upon the structure after us.

Moving on like a tornado at the rate of six or seven miles in six or seven hours, over the splendid plain between the Kansas and the waters of the Arkansas, we caused the buffalo to rear and plunge around

the region in so much terror, and threw such a general panic into the whole country, as would have reflected credit upon *any* expedition; All this, too, without so much as a yelp from a prairie pointer or the whir of a burrowing owl;—these were disappearing, and even rattlesnake clearings began to be few and far between.

Buffalo seemed now part and parcel of the soil, and like shadows of fast moving clouds,—band after band rolled on in countless thousands from horrizon to horrizon,—roaring, fighting and tearing up the earth, without seeming to diminish either in speed or density.

This was quite a spectacle at first, yet we soon became tired of it, and the buffalo were fast becoming bores, from the very number of the specimens; and though ribs and steaks were as much in vogue as ever, the animals themselves as they thundered over the landscape, elicited no more attention from the inflexible Packsaddle Expedition than the gambollings of so many kittens.

The experience of a few weeks had worked marvels, and the buoyant, madcapped youth of the Blue, had become metamorphised into the plodding, serious, thoughtful explorer of Smoky Hill Fork: The buffalo might have frolicked and thundered around for ever, uncared for and unnoticed only that it became necessary now and then, to fire off a gun amongst them to prevent being run over by them and carried off altogether, as were the mule and horse in a previous chapter. In such cases, however, a single shot sufficed, and the sound of the heavy bullet against some tough old robe echoing back like the spat of a brick against a barn door, was all that denoted the least attention on our part to the circumstance and scenery which surrounded us.

Under the circumstances, it was not all unreasonable that an early halt always proved acceptable, and the first shades of night, as a usual thing, found the explorers either preparing to turn in, or already sound asleep in their their philosophic beds; for,—

"Early to bed, and early to rise,
Makes a man healthy, wealthy and wise."

—Was a favorite maxim and most piously observed: Little episodes like naps and dreams, to say the least, were quite refreshing, and assisted materially in breaking the monotony of the trip, and in dispelling the everlasting buffalo and *bois de vache*.

Of these wonders we had seen sufficient for a season, and were in no vein to be much edified by a prolonged panorama, especially as not a single zeuglodon or gold mine could be discovered to give variety to the picture. We shut our eyes, therefore, as we rode lazily along on our lazy mules, and slept and dreamed until we stopped, and then we slept and dreamed until we started, and so on, thereby keeping out in this cunning manner all such familiar sights as would have operated disagreeably upon our feelings. Notwithstanding these incredible exertions, it sometimes happened that there were some on the night watch who found all their efforts vain, and who discovered themselves to their exceeding mortification, wide awake at the very hour when all besides were sound asleep;—so it happened on a beautiful night while encamped on this Fork. The moon as usual was gazing down in its ordinary lugubrious manner upon the slumbering expedition, and as the snores and snorts from tent, marquee and mackinaw sounded softly and musically in the tympanum of the vigilant night guard,—

the noisy little wolf or cayote chattered and barked discordantly from the indistinguishable prairie like some infernal imp, laughing as imps always do, at the miserable wretch with the gun,—whilst the night breeze seemed compassionately to fan his weary brow, and with its soft whispers lull him to rest: and as the listener listened to the whispers of the breeze and to the chattering of the cayote, he paused for a moment on his beat and thought of home,—of friends, of dear ones there; of ——, in fact, an endless succession of one thing or another until he fell sound asleep: His gun fell from his grasp and the rascally wolf sounded his requiem. He was not quite dead, when he was tapped on the shoulder and requested to report himself, which he forthwith set about doing without delay, as his gun seemed to have anticipated the movement and gone off in the hands of a cunning Frenchman who had remained awake for the very purpose, and who no sooner saw the effect of the wolf and the breeze, than he rushed in and secured the useless weapon in less time than one could say Fremontia Vermicularis. The result was an intensely interesting trial the following morning; The prisoner was an industrious and valuable member of the party,—being no other than the botanist of the company, whose indefatigable industry and skill had already gathered together many a rare shrub and flower, which would have been passed ignorantly by, —and whose services in this respect, fatiguing as they necessarily were, should have entitled him to at least some dispensation in his present dilemma; but Justice was inexorable with the important case of the States *vs.* Dogberry; fresh as a precedent, and with the Frenchman and the rifle in the opposite scale,—the unfortunate botanist went up like a weed: He was found guilty and sentenced to be shot of course, or which amounted to the same thing, to shoot from his horse and trudge along on foot like a menial to Bent's foot, situated somewhere west of us, but at what distance no one without a map was expected to know; say a thousand miles, more or less: A sentence which would have been well bestowed upon the deserving Frenchman who acted as witness on the part of the prosecution.

From this camp, which for the sake of the easiest reference, we will call Camp Helianthus, and which is located on a steep bank of this Creek, about sixty miles due west of the crossing of the Santa Fe trail, two other chasseurs were despatched in search of the missing horse and mule, whilst the main body harnessed up and moved on again at its usual velocity for nearly five miles, when a little pond of weeds and water coming in sight, we bream exhausted and camped again for the night.

The grass was of a greener and juicier kind than we had seen since leaving the border and the mules relished it greatly; Wind N. E. or N. W., we forget which,—thermometer thirty or forty perhaps, barometer corresponding, of course; height above the level of the sea at this spot, supposed to be several thousand feet: Night excessively comfortable.

About midnight, according to Uncle Zeek's tobacco box, whilst our little camp of eighty men and several hundred mules and horses, as above mentioned, lay wrapped in unsuspecting slumber and blue blankets, worth from 8 to ten dollars per pair, and the pale moon gazing down upon it as lugubriously as ever,—the sudden discharge of

several guns, accompanied by as many diabolical Indian yells, and the rattling or whistling of several balls or flints or something of the sort over our terrified heads,—brought every sleeper to his senses and his feet at once, and caused the fur to stand up on the terrified heads, as though they had been touched up by some new fangled battery.

Now Indian yells are nothing extraordinary, and may, by some who have heard them rehearsing in a safe place, be considered not unmusical:—But,—the infernal soun s which rang through the heads of the galvanized explorers at Camp Quixote, sounded too much like the last trump to be trifled with, and every one was wide awake, ere the yells had fairly reached him. The opening of a pack of fox hounds rings sweetly and silvery through the forest,—the tinkle of the sleigh-bells sounds cheerfully and pleasantly through the frosty air, and the plaintiff music of the æolian harp mingles with the sigh of the summer zephyr in the most charming melody;—but the yell from an Indian's throat at midnight, as he rushes upon his sleeping foe,—hath such charms and effects of its own, that only those who have been suddenly roused up, as the Packsaddle Expedition was, can ever fully admire or appreciate them. We happened to be in no humor for criticism just at the time, and even if we had been, the hour was inopportune for concerts; so seizing the first weapon we could lay our hands upon, we rushed forth to the murderous encounter; some with guns, some with ramrods, one with a tent pole and another with a packsaddle picked up on the spur of the moment: Whilst Uncle Zeek rammed down a handful of fine tobacco instead of powder, Jake looked in vain for cap or bullets; Baptiste lighted his pipe as a preparatory step for a free fight, and the veteran voyager La Tulippe gathered together his store of moccasins, awls and scraps of buckskin.

The invaders of our peace were by this time far, far away. They disappeared like the shades of night before the coming of Aurora,—as the dew before the sun,—and by the time Baptiste had succeeded in getting his short pipe satisfactorily under weigh, the marauders, whoever they were, were beyond the range of vision: not an object could be discerned far or or near in the dim and dreary prairie.

"The are right, too," observed Uncle Zeek, when this was ascertained to be a *fact*; "there couldn't a' bin mor'en twenty or thirty of the varmin, no how. Arter they found they'd bin barkin up the wrong tree, (there was not a tree within five miles) they bummuxed, the varmin."

"They *are* a cowardly set, them Pawknees," added Josh Haskor, "and I have frequently heard a relativ of mine say"—

"O, yes," interrupted Uncle Zeek, "they are cowardly enuf, the varmin, but it tickles *me* to think what a *bu*-tiful time of it they'd a had, eh, boys? wouldn't they tho, a *bu*-tiful time of it, the cussed red varmin."

"Yes, if they'd only staid long enuf, Uncle Zeek," said Josh; "but I've always heard my relativ' say that"—

"Yes, Josh, my boy," interrupted Uncle Zeek again, "if they'd a only staid,—but they ar foxy, the varmin,—the foxiest kind of varmin, eh, boys?"

"It's no use bein' a'raid *of* them, anyhow," said Josh, "for I've frequently heard my"—

"Yes, Josh," said Uncle Zeek, "a man musn't never feel scared for if he once gets his har up, he mout as well give up entirely; it's no use at all in fightin' when a feller's badly skeared."

"Spose ze diables return in short time," asked Baptiste, "spose dis night in two, tree clock?"

Uncle Zeek's answer was inaudible, if he answered at all; his visage lowered, a terrible and awful frown crossed his brow, and asking for percussion caps, he placed one upon his gun and proceeded to another portion of camp, to ascertain what the chances were of another Indian surprise. The marauders, whoever they were, had been decidedly foxy in Uncle Zeek's acceptation of the word, and had retired so suddenly after their first yell, as to justify the belief that they had been very badly frightened themselves at the panic and hubbub they had occasioned, and were by this time making the gravel fly in the direction of the Smoky Fork, to the best of their abilities. The Pack-saddle Expedition pursued them for an immense distance, with their eyes, and not coming up with them, pronounced the whole affair a hembug and returned to bed. Uncle Zeke procured assistance and drew the load from his gun, and whilst Josh related several exploits of his relative, we again fell fast asleep, and dreamed of scalps and tomahawks, bows and arrows, butcher knives, vermillion, beads, looking-glasses, etc., etc., etc., & etc. After all, it was not a supposable case that the varmin wanted our scalps, for there were plenty of horses and mules, and Uncle Sam could have better afforded the loss of them than our own invaluable selves. We resolved, however, unanimously that the government should chastise the rascals for their preposterous impudence, and troubled our heads no more about the matter.

Rauchon and Lajeunesse not appearing as soon as they were expected,—it was resolved also to send a party in search of them, to prevent their falling into the hands of any foraging party of Pawnees who might then be patrolling the district.

Mounting some of the fleetest horses and armed to the heels, a strong squadron under the command of the captain, rode off towards the east,—leaving the balance encamped at Camp Quixote, with orders to wait for them a certain length of time, and then proceed without them; as it was fair to presume in case they never turned up, that they had been used up or rubbed up by some or other war party of the enemy. For the interest of the expedition, therefore, the impenetrable centre was, by all means, to remain united and solid,—it being as we have frequently observed, the cream and essence of the whole affair.

This important body was then left under the hands of the surgeon of the company, it being the most advisable plan under the circumstances, with full discretion to amuse himself ad libitum by analyzing its queer ingredients, and more especially, to keep an account of its pulse in the event of a second onslaught of yelling aboriginees.

Under these happy auspices. the little band of Africans, Mexicans, Canadians, Irishmen, Scotchmen, greasers, Americans, &c., chatted merrily around their camp fires, whilst the mules rambled and grazed at will over the crispy grass, cropping and grinding the juicy stalks with all the gusto attendant upon easy consciences and well spent lives.

Uncle Zeek cleaned his rifle in silence, Josh told marvellous exploits of his relative to a Mexican greaser in a greasy suit of deer skin, and who *comprended* every word, of course. Baptiste smoked his short pipe with closed eyes and Mr. La Tulippe manufactured moccasins; satisfaction reigned in Warsaw, and from the appearance of the jolly camp, no one would have supposed that it had ever been frightened in its life,—to tell the truth, it had forgotten the fact altogether.

It was one of those placid pictures of ease and otium cum dig, rarely seen with such landscape accompaniments, and Salvator Rosa might have pronounced it a fair daub in the way of banditti or contrabandista, no matter which, for all hands were in high glee and felt as safe as mice.

Some strolled to a considerable distance, say a hundred yards from camp, in search of specimens for the geologist or botanist. Whew,—all at once,—a *yell!*—another piercing, stunning, infernal Indian yell, and the quick galloping of horses close upon us,—startled the happy little camp once more, and struck terror into the heart of every jolly explorer. Some flew to arms,—some flew to their legs,—some flew to the waggons, and some would have flown off altogether, if the attempt had been safe and the surprise had not been so complete. Uncle Zeek's gun fell in the fire, whilst the wiping stick was brandished in a terrible manner: Josh stood transfixed,—interrupted for good; the greaser slipped off somewhere, and Baptiste's eyes became sunflowers. Some had grasped their rifles, others attempted to drive in the scattered mules which drove every way but the right one,—the captain *pro tem.* was "somewhar or no whar," as Uncle Zeek found time to remark, and the entire band of banditti was in a perfect stew: The moral of the army was destroyed,—the contrabandista were consumed, annihilated,—knocked into perfect pie,—the cream and essence was evaporated.

And whilst it evaporated, the chivalrous little band which had left us in the morning in search of the lost hunters, rode into camp a l'Indienne, with kerchiefs around their heads and filling the air with their war cries. They had been successful in their hunt, and had resolved on their return to charge upon us, and test the pluck of the impenetrable. The experiment proved successful enough in all conscience, but as bad luck would have it, the cream and essence turned out to be in rather a sour condition, as we have described it, and Uncle Zeek for one, remained sour during the balance of the trip. The gallant squadron dismounted amidst the loud and thundering plaudits of the delighted and admiring explorers, who gazed upon the spectacle as though it were some ancient tilt or tournament revived.

The greaser who had disappeared threw his wool hat high in the air and shouted "Viva el Capitan, Dios y libertad!"

Thy Smile.

BY C. F. T.

1.

Oft I think how thy smile warmed my breast,
As spring wakes the earth from its wintery rest,
How its radiance played o'er the waves of the past,
And illumined the future with the halo it cast.
Then I feel that vernal hour hath fled,
The bloom it awaked from its tranquil bed,
And left not a ray on the waters which flow
O'er the hopes of the past sepulchred below.

2.

Oft I think of thy smile in that halcyon hour,
As the kiss of morn to the slumbering flower,
A reflex which threw o'er our darkness a light,
As the bow of the storm enraptures the night.
Then I feel that the morn forever has gone
From the floweret awaked to its warmth alone,
That the bow of promise is lost to the cloud,
Broke with the heart in the hand of the proud.

3.

Oft thy smile lights the dream of my heart,
Like the soft glow of sunset too early to part,
Entrancing the soul with love to the last,
As its halo in transit fades with the past.
Then I feel, that light will come no more,
To woo the fond heart to its sunset of yore,
That the halo of love our 'Elysus' of youth,
Is dissolved with the past in a mockery of truth.

4.

Oft thy smile gilds the dark wave of my life,
Like a star-gleam o'er the billows of strife,
Awakeing the peries of thought from that sea,
Whose singing shells murmur devotion to thee.
Then I feel, that star-gleam fleeting has gone,
That hopes singing shells have sunken alone,
And gathering clouds hang dark o'er the sea,
Obscuring love's radiance forever from me.

5.

Now I think thy smile's that glow of the night,
Enrapturing the sense with Aurora of light,
Till the heart is chill'd with a sere-arctic breath,
And hope sinks benummed 'mid the ices of death.
Now I feel every glow from my bosom effaced,
By gathering shades o'er my life's desert waste,
And pray for oblivion's dark mantle, to cast
O'er the wounds thy pride hath left in the past.

ST. LOUIS, MARCH 1ST, 1856.

ST. LOUIS THEATRE. Since the departure of Miss Heron who became distinguished, by the display and appreciation of her genius at St. Louis, in January, Mr. Bennett and Miss Ince have successively appeared in the St. Louis Theatre, and proved themselves artists of a high order, though Mr. Bennett evinced more of a practical than humanely philosophic spirit, brooding over "Poor Yorick's skull," and Miss Ince would have produced an effect more overpowering in the Hunchback by representing with positive points:

"DO IT:—nor leave the task to ME;"

without throwing the stress of emphasis on the negative point: LEAVE. These, with other illustrations, which might be given, show there is room for some improvement in their skill.